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OF

DENTAL SCIENCE.

EDITED BY

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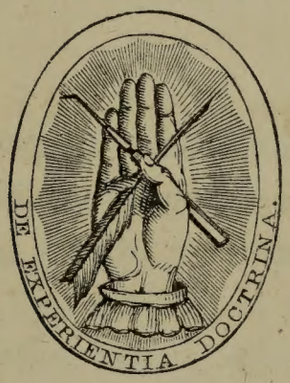

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OF

DENTAL SCIENCE.

Vol. I. NEW SERIES—OCTOBER, 1850. No. 1.

ARTICLE I.

On the Use of Tin as a Base for Artificial Teeth.

DR. C. A. HARRIS:

Dear Sir:—In compliance with your request, made to me at the last session of the American Society of Dental Surgeons, held at Saratoga, I send you the cuts representing the progressive stages and manipulations for casting and gilding whole under sets of artificial teeth with pure tin. I am aware that, in doing this, I am bringing into notice a system of practice which has hitherto been confined to a few only in our profession, and which will not, probably, at first view, meet with general approbation, as it is yet a question, in the theory of some among us, whether tin is admissible in our practice, for constructing dental substitutes.

In the curative treatment of carious teeth, *tin* has been successfully used as a filling; and if it has ever been injuriously affected, it has been owing to the unhealthy secretions of the mouth. But we find that, in the absence of all the human teeth, as in the case of infants and old persons, the mouth and breath are more sweet, and the secretions more healthy, than where

they are all or in part remaining. Consequently, with proper attention to cleanliness, pure tin would be much less liable to be injured by that agent, when used as a base for artificial teeth, than as a filling, provided that the work is well adjusted, and does not cause excoriation. Where the mouth is wounded, or unhealed from the recent extraction of teeth, the tin in contact with such parts, (as I notice in my experiments for temporary sets,) becomes rough and corroded by the action of the buccal fluids, which are always acidulated when the mouth is in this condition. To prevent this, when I do not design to gild the work, I use a thin plate of gold under the tin, where it comes in contact with the gum.

The peculiar charm which gold possesses, will always secure for it a preference, with many of our patients, to any of the inferior order of metals, even though they could be furnished with a superior article for real service and comfort, at less expense. Some of our profession also consider it as empirical practice, for no other reason than the *tinkerish* way in which they are constructed, and the cheapness of the material, and fear that if generally adopted, "this our craft is in danger to be set at nought."

But from all that I can learn, from extensive experiment and inquiry, notwithstanding the objections urged against it, I am still of opinion that pure tin gilded, or without gilding upon a thin gold plate, may be used in all cases of whole or fractional under sets of artificial teeth, with more comfort and advantage to the patient, and with less expense and labor to the operator, than is possible with the use of gold alone. The evidence which I have collected in favor of this system of practice, appears to me sufficient to establish the fact that it is no longer matter of inquiry or experiment, whether tin be admitted in our practice as a base for artificial teeth, but that it is a scientific truth, and that every practitioner will, upon examination, find it his duty to recommend it to his patients, as best suited to secure the advantages which they require.

The manner of constructing sets of teeth upon this plan may be varied in different ways, and produce the same results. For

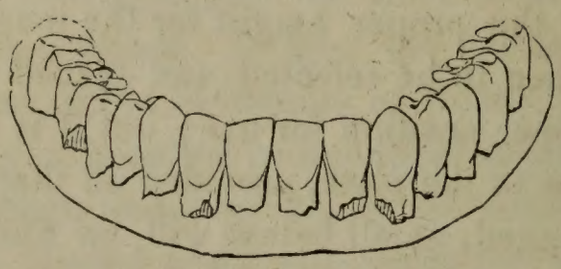
fractional sets, it will be necessary to prepare, in the usual way, a thin gold plate, and strengthen that part which comes in contact with the natural teeth which remain in the mouth. When the plate is adjusted, place the wax upon it, and cut it to the right curve and the proper height for the length of the teeth. The teeth are then to be selected and placed round upon the wax, in the proper position for use; but it is not material that they come down to the plate, provided all that remains in view is properly arranged, as all below will be filled with tin when the process is completed. Plaster and sand is now to be put on the outside of the teeth and plate, in the same manner as though they were to be soldered in the usual way. When this is done, the wax may be cut away, the teeth removed from the plaster, and a thin gold back put upon them. In backing them, it will be necessary to bend the platina wires over the gold. The backs may even be soldered to the plate, either by the blow-pipe or soldering iron, thus forming one solid mass of tin, covering the wires, and imitating, as nearly as possible, the form of the alveolar ridge which has been absorbed. When this is done, the plaster may be taken away, and as much tin put upon the front as will restore what has been lost by absorption of gum and alveolar process. When the piece is properly trimmed and burnished, it makes a very strong, and natural set of teeth, in appearance, while the additional weight given to it by the tin keeps it in place better than those made in the ordinary way.

Whole under sets of teeth may be cast of pure tin with great facility, dispensing with all metallic castings and plates of every kind, in the following manner:

After the first cast is procured, which should be made of plaster with a large proportion of sand, fit to it a plate of tin, as thick as can be well rubbed down with a burnisher, and as large as a plate of gold should be. The wax is then put upon the tin plate, and trimmed to the proper curve and height, as in the ordinary practice. Next arrange the teeth upon the wax, taking care that they do not come in contact with the plate, by about the sixteenth of an inch. It is not necessary that the teeth should be lined, but the platina wires should be

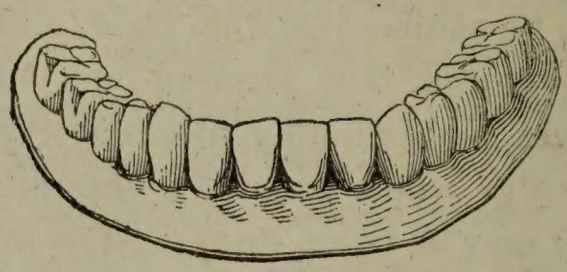
bent divergingly. The teeth may be broken off with a hammer or ground as most convenient, and arranged in a manner similar to the following cut:

FIG. 1.



Then place a strip of wax around the bottom of the front side of the teeth and plate, concealing all the ragged ends and bad joints. All the wax is now to be carved to represent the natural gums, and to supply the required fullness, See Fig. 2.

FIG. 2.



Care must be taken to select such teeth as have their platina pins low, so that they may remain imbedded in the wax after the carving. When this process is completed, oil the plaster and sand cast, and place the teeth and wax upon it, and pour over them more plaster and sand, so as to cover the whole with a thick mass. After the plaster is thoroughly hardened, the mould may be parted, and the tin plate and all the wax taken away, leaving the teeth secured in the plaster, as Fig. 3 illustrates:

FIG. 3.

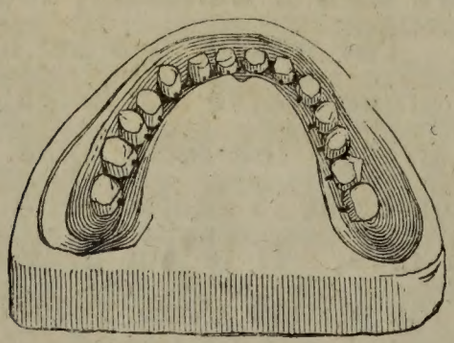
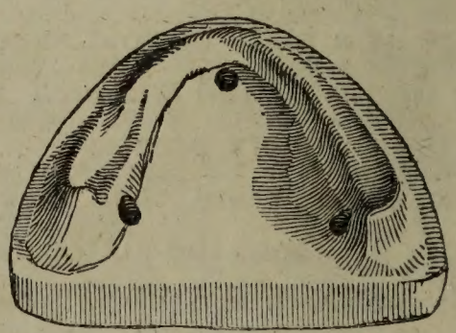


FIG. 4.



Apertures must be constructed in the plaster, into which to pour the melted tin, and also for the escape of the air, at points which will not interfere with the subsequent finishing, as marked in Fig. 4.

After washing the platina pins with a flux of muriate of zinc, the two parts of the mould must be securely bound together, and, to insure perfect success, the whole should be slowly heated to the temperature of the melted tin, which it is now ready to receive. Heat pure tin just sufficiently to flow readily, and carefully pour it into the place prepared. When sufficiently cool, remove the plaster, and prepare to polish, first with the file, then with different qualities of sand paper, which executes this work with great facility. Then finish with the same care as for gold. (In cases where gum teeth or blocks are required, the above directions cannot be explicitly followed, as the teeth must then be wholly supported at the base and on the inside.)

The patient should now wear the teeth a few days, so as to become satisfied that they are well adjusted, and that no subsequent alteration will be necessary, as it would deface the work were it done after the gilding.

To prepare the set for gilding, a thorough cleansing is necessary, and unless this is effectually done, the adhesion between the tin and gold will be imperfect, the gold separating from the tin in burnishing, and easily rubbing off. In this process, all grease must be removed by the use of alkaline solutions and afterwards water, then guarding against the moisture of the hand by a glove, perfectly polish the tin with a jeweller's soft brush and prepared chalk. Again rinse in water, to remove all extraneous matter, and immediately place the teeth in the gilding solution. During the process of gilding, the teeth should be removed two or three times and burnished, both to give solidity to the deposit, and to discover imperfections if any exist. When the gold is sufficiently thick, burnish in the usual manner.

I have not fully decided in my own mind, that the constructing of sets of teeth without a thin plate of gold, as first described, is the best method; neither do I as yet feel prepared to speak positively as to the durability of gilding when worn in

the mouth, as it is only about one year since I introduced this method into my practice. A few days since, I made a thorough examination of the case, and could not discover any appearance of the gold wearing off.

This is for me sufficient encouragement to pursue the system until time shall render its true and impartial verdict concerning it.

The experience of Dr. C. O. Crosby, of New Haven, corroborates that which I have given, and has the advantage of much longer trial. In answer to some inquiries, he writes to me thus: "Mr. —— has worn his under set, constructed upon tin, for nearly three years, and still perfect. Another patient, Mrs. ——, has a set, which has been in use for two years, still in good condition, but has a silver base or plate, is filled in or loaded with tinner's common soft solder, galvanized with silver, a thin coat, and burnished, and then galvanized with gold, about three coats, and burnished each coating. There is about $2 50 value of gold on each plate. I have about sixty plates made upon this plan. Soft solder plates look dingy unless well galvanized with gold. The galvanizing will stand if there is any gold put on, and they actually require less cleaning, from the fact of the gold being pure. There is no galvanic action when all the other metals are covered. I consider tin alone, without galvanizing, *better* and having *less taste* than *eighteen carat gold*, with copper, silver and gold for solder. I have never found a person that could not wear them."

Dr. Wm. A. Royce, of Newburgh, the pioneer in this practice, has also kindly sent me an account of his experiments, which I forward to you to use as you judge proper, and with many good wishes for the success of your valuable journal, and for the rapid advancement of our important profession,

Allow me to remain,

Truly yours,

GEO. E. HAWES.

ARTICLE II.

Experiments in the Use of Tin for Insertion of Teeth. By W. A. Royce, Dental Surgeon, of Newburgh, N. Y.

My first effort was made in 1836, for a lady aged about sixty, who had lost her inferior incisors and some adjacent teeth, in a sound and beautiful state, by harsh brushing, and desired me to replace them with little or no expense.

After an impression and plaster cast were obtained, the ejected teeth were cut off near the end of the root, and perforated with a small drill, and strung upon a silver wire; then placed on the plaster cast, and supported by the wire around the plaster teeth, in proper position, and at such space above the cast of gum as would permit molten tin to flow beneath the teeth; after which a curb was constructed around the teeth and gum, properly dried, and the tin poured in, thus forming a base fitting the gum and clasps to the permanent teeth, and holding the inserted teeth firmly. Filed, polished and introduced, it gave great satisfaction until the death of the patient, which occurred some eight or ten years thereafter.

My second use of tin was in 1838, for a lady aged about forty—to insert her own incisors, which had fallen out, and afford support to an entire upper set by spiral springs—tin base to rest upon gum and badly worn down teeth, and attach to a few loose, attenuated teeth—a temporary resort for a patient imbued with more fear than discretion.

The tin base enclosing the teeth was stereotyped over the gum and teeth, as in first case, and filed, fitted, polished and springs attached.

Calling some two or three weeks thereafter, she said it had caused her much pain, but was then comfortable; and it was a long time in service, with about the usual results. I became prejudiced, however, against tin to lay on the gum, and used but one more, without plate, to lay on the gum. This third case was a tin base, in an entire upper and lower case, for a gentle-

man about sixty-five, whose saliva was so inert that sixteen carat gold plate would not tarnish sooner than eighteen carat usually does. He wore, and used severely, his teeth for about two years, when I struck and fitted a gold plate, of about No. 30, and stereotyped the tin on it—embracing the teeth which had been freed from their former base for this melting. An accident occurred in this experiment: the tin used was too hot, and amalgamated with the gold plate just where the current of molten tin impinged on it. Thus I learned that tin should not be hotter than barely to produce limpidity. I think I did not misjudge when, after several years use of these cases, I abandoned the employment of tin for the part coming in contact with the gum. It did not produce irritation on the central part of the gum; but toward either outer or inner border, in contact with integuments, often abundant, and sensitive, it seemed to me to be more irritating. Tin will corrode in contact with excoriated surfaces in the mouth, and throw up a slight pile of grey (chloride?) compound, insoluble in the saliva, somewhat harsh to the feel, crisp to the file or scraper, and at least mechanically irritating to the excoriated surfaces which caused it.

My fourth experiment was for an elderly lady—mouth totally toothless; desired the lower denture only, on a very broad inferior maxilla and large alveolar ridge, to match the teeth in a small superior maxilla and gum. This was another nothing or next to nothing pay case; but I attempted to better my former practice, and struck and fitted a silver plate. Set French teeth with silver wire studs soldered to plate; stereotyped the tin gum on the plate; gilded all parts finely and prettily. Thought I had made a fine advance. It was tried fairly for several days, and proved to be a superior sialagogue. I question the superiority of mercury to produce ptyalism.

My fifth effort was to insert an entire upper and lower denture; lower gum narrow, and summit thin. The teeth were mounted in the usual way on gold plate, except the metallic gum was tinman's soft solder, flowed around the teeth with a tinker's iron. Twelve or eighteen months use showed the gum shelling off—a black and separating mass, like the moss on the bark of a

forest tree—another mortifying experiment, but easily remedied by substituting pure tin for tinker's solder.

The sixth experiment was the same as the fifth, except the lower gum was wider, and silver linings were used, and the tin made to serve both to fasten the teeth and load the plate. The silver linings evinced galvanic polarity, causing frequent pricking shocks to the tongue. Gold lined teeth were substituted, and the shocks obviated This experiment, made in 1841, has decided all my practice since. I get up my lower cases, when entire, about the thickness known as No. 30. Strike the plate about one-sixteenth to one-eighth inch extra wide; curve up the edge the extra width on the outer border; coat the upper surface with pure tin, using a tinker's soldering copper, and saturated muriate of zinc as flux. The teeth are next arranged so as to articulate properly, but if admissible their lower ends are broken off, to permit a considerable body of tin to flow under them; line them with the same thickness of gold plate; place them in position, with wax on their lined faces; set them in plaster, and when the wax can be removed, proceed to solder them by their linings, with tin, to the plate, filling all smoothly from tip of teeth to lower edge of gold plate; remove the plaster on the outside of the teeth, and fill up the interstices and base of teeth in such quantity as pleases; file off any excess of tin any where; preserve a thick smooth border to the plate, both within and without the arch; scrape down all asperities not to be reached by the file: mat the surface with fine sandpaper; clean out the sand and burnish smoothly; then finish beautifully with flannel and chalk, which last will ever after preserve the cases cleanly, if used daily. By this method any or all the teeth are readily detached, set in new position, and re-secured, ad infinitum. For fractional cases, gold plate should be heavier, and the clasps soldered on with gold solder, as in using the tin solder they become detached in use, or when repaired or altered.

Very extensive accommodations can also be afforded to the gum, by taking the tin gum or teeth off over the misfitting section, bending the plate to fit, and again restoring the gum or teeth.

To stereotype the gum, instead of the process of flowing it on with a soldering copper, I have tinned the linings after riveting—set the teeth in position—placed pure yellow wax around the teeth, just as I wished the tin to be added—cast the whole in plaster—exposed the whole to such heat as would dry the plaster and cause the wax to be absorbed by it—cut an opening to pour the tin through before such drying; take a proper quantity of tin and fuse it in an iron spoon; watch the fusion, and permit no greater heat than sufficient to cause the convex edges which first are prominent around the edges, to disappear—in other words, to make the whole surface of the molten tin flat; then pour it in the plaster flask, and soon as it has cooled break off the plaster, when the tin will be found to occupy precisely, or very nearly so, the exact place of the wax. Little sand-papering is generally all the trimming needed; sometimes certain spots may require a touch of the soldering copper.

The immunity against corrosion that cadmium possesses, seems to indicate that it might be better than tin. I have not tried it. My efforts to coat tin with galvanic gilding were futile, as the gold very soon disappeared from the friction of aliment.

ARTICLE III.

Filling Teeth after the Pulp-Cavity has become Exposed.

The propriety of removing the dental pulp from any of the teeth farther back in the mouth than the cuspidati, has long been a mooted point with many of the most skilful in the profession of dental surgery. Some have asserted, that wherever the cavity was sufficiently large to expose the vessels, it was best at once to remove the tooth, as it never could be effectually saved and rendered serviceable. Others have contended that the tooth might be made as good as ever, by capping or otherwise pro-

tecting the uncovered nerve from pressure and the action of external agents. Others, again, have attempted the extirpation of the nerve and blood-vessels, and filling the entire length of the fang with gold.

If we accept the first as the true mode of procedure, we shall probably sacrifice a great many valuable teeth, and teeth that might with skill have been saved and made useful for many years. It is possible that most practicing dentists of *this* day make *some* attempt to save bicuspids and molars, particularly where, from the loss of many other teeth, they are much needed for mastication. The question then becomes one of vital importance, which is the best method? which is the truth?

Perhaps one of the best ways of arriving at the truth, would be for each one to "give in his experience," for, after all our theorising, experience is the great teacher. I will endeavor, in as brief and concise a manner as possible, to give the results, as far as known, of my own operations on teeth thus situated, in the past sixteen years. In 1831 I had the pleasure of witnessing the extirpation of the pulp, and the filling of the fang to the apex of a central incisor, in the mouth of a lady, by that accomplished dentist, Dr. Edward Hudson, of Philadelphia, and have had the opportunity of seeing this tooth frequently since; it became somewhat discolored, but not sufficiently to render its presence offensive, and still remains a serviceable tooth—the filling being as sound as when first put in. The success attending this operation induced me to attempt, in 1833, the filling of four incisors for a gentleman, all of which I filled in the fangs as far up as I could succeed in passing a small probe. These teeth I saw in 1846—thirteen years after—and they looked well, had never had any abscess, or any irritation in their sockets. The first attempt I ever made to save a tooth by capping a nerve, was in 1836: a large superior molarin the approximal surface, the bicuspid having been removed, and thereby affording an excellent opportunity for a perfect operation. Upon removing the caries, the nerve became apparent, and a slight redness was seen, though there was no bleeding of the vessels. I made a concave cap of gold, sufficiently

strong to resist any pressure I could exert with my instrument in filling, and placed it very carefully over the part, taking great care that the edges should have a firm bearing on the sound surrounding bone, and then filled the cavity all around and over it; and after polishing the filling, and finding that cold water thrown on the tooth and filling from a syringe produced no sensation, concluded the operation was perfectly satisfactory, and the tooth effectually preserved. At the end of one year, the patient called on me to have other teeth examined, and said this tooth had done very well; that though occasionally it gave him a thrill, it never amounted to pain. In six months more I again saw him, and then found that an abscess was forming, and upon removing the filling and cap, the pus gushed from the opening. This relieved it for the time, but in a few days, the tooth becoming more painful, he begged to have it removed, which was accordingly done.

In 1837, a lady called on me, complaining of a roughness between her central incisors, though she had no idea there was any amount of decay—supposed a slight filing would remove it. Upon making a separation with a file, considerable caries was found in one of the teeth, upon removing which, the pulp was almost reached, but not wounded, so as to produce pain. Being very unwilling, as the teeth were very beautiful both in shape and color, to destroy the nerve, and thereby involve the probability of changing the hue of the tooth, I concluded to fill over it, and watch it carefully from time to time, so that the first approach of danger might be noted, and the nerve extirpated and fang filled if it should prove necessary. One year after, I received a note, requesting me to advise what should be done with this tooth, as the lady had been suffering some days. Upon calling to see her, I found that she had felt pain in it for several months, and it had become almost black.

I immediately removed the filling, which gave relief from the pain, and after some treatment, filled the fang and crown, but the color of the tooth I never could restore. The whole bony structure had become so much discolored that it was impossible to restore it. This, with some variations of condition and

appearance, modified by the character of the teeth and temperament of the patient, has been the result sooner or later, in nearly all my attempts at filling teeth over exposed nerves. There remains for consideration now, only the last mentioned method of treatment, to wit: the operation of extirpating the diseased or exposed tissue and filling the cavity. My experience convinces me that wherever the vascular and nervous branches distributed in the bone are ruptured and their connexion with the bone severed, that the pulp, if left remaining as in the operation of capping, dies sooner or later, and when it dies in this way, it involves the early death and loss of the tooth. The pulp becomes a center of irritation, inflammation extends to the external membrane, and the tooth perishes by the loss of its only remaining supply of vitality. This is not so likely to happen when the nerve and vessels are skilfully taken out and the fangs are filled with gold. When this operation is successful, the circulation in the periostial membrane remains as perfect as ever, and the body of the tooth naturally supplied by this route, is still healthfully supported; and it is moreover clear by all the analogies of the circulation, that even the most interior parts of the structure must derive an adequate supply of blood through the anastomosing radicals of excised branches left by the operation of extirpation; and so the prolonged *life* of the tooth, which experience proves, is maintained and accounted for. Of course the utility of this operation will depend upon the perfectness with which it is performed.

It is often very difficult to reach all the fangs of a molar tooth in the upper jaw, and great expertness is necessary to fill them so as to leave no room above the filling for the accumulation of pus. Since the year 1840, I have filled a great many teeth in the fangs, and as far as my note book furnishes evidence of the results, eighty out of one hundred cases have been successful, and I am inclined to the belief, that most of the failures have been owing to my imperfect performance of the operation, rather than a mistake in the propriety of the operation itself, for in those which I have extracted some months afterwards I have found almost in every case, either, that the ves-

sels were not entirely extirpated, or that my filling had not reached quite so far as it should.

From the result of my own operations, therefore, I have arrived at this conclusion, which I must hold until further experience proves its fallacy. That a tooth, the nerve of which is exposed, and the circulation of the blood-vessels cut off, must and will, sooner or later, become an ulcerated and diseased tooth, demanding removal, and perhaps involving the alveolus in its disease; and, that by thoroughly extirpating the pulp and filling the cavity, eighty per cent. may be saved effectually.

E. T.

ARTICLE IV.

The Touting System amongst Dentists.

Every one at all conversant with Goldsmith's Tales, must remember the story of the celebrated quack doctor and his son, who were in the habit of traveling through the country entrapping the unwary, and plundering the simple and credulous. The son generally preceded the father by a few days, and mounted on a scaffold in the market place, announced by sound of trumpet and beat of drum, his parent's advent, pronouncing a high eulogium upon his learning, his skill, his miraculous cures, and his still more miraculous cheapness. The doctor on his arrival found the harvest ripe for the sickle and sheared the simpletons accordingly, leaving them to find out the cures and to calculate their losses at their leisure, while he proceeded on his way to fleece the next batch. Whether Goldsmith's doctor was the prototype of the touting system that prevails so extensively in the present day, we cannot take upon ourselves to say, but this much is certain, that a practice discreditable and undignified in itself was formerly confined to low pettifoggery, old Baily lawyers, linen drapers, tavern keepers and others of that class, has of late been introduced into the medical profession and its offshoots. And we regret to say, has been adopted by men who

have some pretensions to professional skill and medical science, and who do not hesitate to tout for practice and patronage from all who have any claim to respectability.

With pure members of the medical profession, it is not our province to deal, "the Times of Medical Literature," "the Lancet" has repeatedly pointed severe strictures against the wrong-doers, and called them to account for breaches of professional etiquette. To the editor of that journal, therefore, we consign the touting members of the medical profession, feeling assured that the honor and character of the body he represents will be perfectly safe in his hands. When we find the higher branches of medicine and members of the legal profession resorting to such practices, we need not be much surprised that among the offshoots and collateral branches of surgery, the system has increased to a frightful extent. Among the members of a profession where competition is severe, the temptation to resort to any means by which practice may be obtained is undoubtedly great, and they are too happy to be enabled to point to men of higher standing and pretensions, imitate their bad example and shelter themselves under the plea that "others have done so before them." Among the varied phases and aspects under which professional competition exhibits itself, touting is probably that which is most likely to find imitators and disciples. The success of one adventurer induces hundreds to follow in the same path, the infection spreads like an epidemic, and unless checked by wholesome ridicule and exposure, will probably obtain general sanction and recognition.

Among the various branch practitioners, dentists may be said to be prone beyond all others to carry out the touting system. It is a department of surgery in which large numbers are to be found peculiarly adapted for such practices; we may instance the large number who have commenced as dentists without the remotest qualifications, and who resort to this extraneous mode of procuring practice; there are also those who are induced to follow the example of their neighbors, those who do it from choice, those who resort to it for want of knowing better, and those compelled by necessity, while all evince a want of

proper respect for themselves and the profession. Men half educated both in medical and dental science are seldom very scrupulous as to the means by which a practice may be obtained. Having no confidence in themselves, they rely upon the facility with which the credulous public may be led to adopt the exaggerated estimate of their skill which their "trumpeters" put forth and reap the fruits of a system which is virtually one of fraud and deception.

The methods resorted to by your dental touter are in many instances curious and extraordinary, and depend upon the resources, fancies and ingenuity of the practitioner. Some direct their energies to a display of their talents by means of fancy door and window case exhibitions, of the style of work performed within, while a boy, all over buttons, thrusts lists of prices into the hands of every passer by, stating the tariff of charges, from a set of artificial teeth down to a single grinder, with N. B. all consultations free. Others of about the same grade of respectability exhibit large placards and posters on traveling vans, announcing an important discovery in artificial teeth, and stopping with the instruction, no connection with any other person of the same name, practicing as a dentist. Others inundate a whole district with circular letters containing a list of peculiarly tempting prices, extraordinary discoveries, wonderful cures and apocryphal testimonials, and allowances for a series of operations, and winding up occasionally with some doggerel verses, on some compound for filling decayed teeth.

These departments of touting are, on the whole, inoffensive, and are adopted by those whose means are limited, and who seldom venture beyond the mere exhibition distinguishing their trade. But there is another method resorted to, by means of advertising, and in this way large sums of money are annually expended; here we find all classes of touters setting forth their prices and pretensions to patronage, and really some of these advertisements contain very interesting and amusing specimens of laudatory literature. We have Teeth, Teeth! Pretty Teeth! Beautiful Teeth! a New Discovery; every advertisement containing some wonderful secret, of course known only to the

advertiser. The simple public is led to believe that it is as easy to have your mouth filled with ready made teeth, as it is to go to Moses & Sons, the cheap tailors, and be fitted with a ready made pair of breeches. You have only "to open your mouth and *pocket*, shut your eyes" and you will find yourself the *fortunate* purchaser of some second hand misfit, neither over clean, ornamental, nor very useful artificial grinders.

This department of touting is always attended with great expense and may be looked upon as a dental gambling speculation. It requires ability and judgment to carry on the system, to devise the best means of circulation, and of framing catching advertisements, and above all, it requires a certain amount of capital. Newspaper proprietors having of late years entertained *well* grounded doubts of the stability and pecuniary resources of this class of professors of dentistry, and demand prompt payment. Young and inexperienced touters continue for a time advertising, and all at once disappear from the stage, the means cannot be found, and as no credit is given they soon discover that they cannot make head against speculative capitalists in advertising for patronage. Those who have the necessary amount of funds to persevere, succeed no doubt, to some extent, as there are always a certain class of persons on the *qui vive* for cheap, dirty and deleterious artificial teeth and dental operations. Nevertheless, few of them realize even a competence, and being dependent on the large outlay they are compelled to resort to.

We have hitherto referred only to the struggling class who maintain themselves by direct self laudation, but there are many other curious specimens of those who follow the *trade* of dental surgery and whose ingenious but not very respectable efforts to obtain notoriety and practice, must excite the risible faculties of all who are favored with a peep behind the curtain. Among the many varieties whom we should sketch for the amusement of our readers, if time permitted, the most amusing and instructive are the touters of a different standing, comprising men, many of whom, one would suppose too well conditioned at the commencement of their professional career, judging from their self-

estimation and importance, to have recourse to a system of touting. As we before observed in other articles, England has long been the favored land of professional humbug; there it flourishes in full luxuriance as regards dentistry, and one of the most ludicrous and occasionally successful is that of your gastronomic touter. John Bull has from time immemorial been proverbial for his love of the good things of this life; mention the word dinner, and immediately visions of huge haunches of venison, turtle and champagne start up and float in his imagination till the day and hour arrive, neither time nor distance is allowed to interfere, other occupations are put aside and miles of railway traversed if necessary, to enable him to ensconce himself at the appointed hour under the "mahogany" of your real dental gastronomic practitioner.

The professors of this kind of touting are men either commencing a professional career, or who have purchased a practice or position, and who are of course desirous of retaining in their service the corps of walking gastronomic advertisers. The majority may be said to be self-educated, either in medical or dental science, and the only chance they have of securing a practice, is in giving extravagant dinners to M. D's. and surgeons in embryo, specialists endeavoring to form a connection through the medium of *name only* of some eminent practitioner, while perhaps a medical knight or baronet will occasionally *lend* his countenance to the entertainment, as the patron of the successor, the hunter of fashionable patients, and the lion of the feast.

In these cases, the touter calculates with arithmetical precision the expenses of his entertainment, the profit per contra to be derived from each of his guests, and the value of each, individually, as a walking pair of bellows, in blowing forth his professional fame. To do John Bull justice, he is seldom ungrateful. You have only to ring him through the nose, ply him with champagne and venison, and he is your fashionable touter's firm friend—the good natured, stupid animal can be made to say or to do any thing for the prospect of a repetition of the feast. In fact, a close account is kept by your dinner-giving

touter, of the value of each individual guest to him, in returning the *quid pro quo*, in the shape of patients and recommendations. If the return be not adequate to the value expended, the M. D's. and specialists may rest assured that no repetition of the touter's *disinterested* hospitality will be experienced, and the intimacy will speedily thaw down to a how-d'ye-do and the cold shoulder. Norton's broadest farce furnishes nothing more ludicrous than the exaggerated boastings of one of this class when a brother professional chances to come in contact with him. Your real dinner touter will have you to believe that he has discovered some secret remedy for filling teeth, some curious instrument invented and used only by himself, his instrument maker having strict injunctions not to part with the patterns; that the same was examined and approved of by Dr. Boobey and Mr. Alexander Twaddle, when dining with him the other day. The conversation is occasionally flavored by throwing in a little fashionable seasoning. Lady A., the Earl of B., &c., are confidentially named as persons on whom he has tried his new inventions, by the recommendation of his gastronomic friends; and if you do not leave him impressed with a high opinion of his abilities and his professional standing, it will not be owing to any want of industry or zeal on his part in puffing them off.

This system of touting for practice is said to be very expensive and very unsatisfactory. Like the Spanish blood-hounds employed in hunting down the Indians, who required to be occasionally regaled with a taste of the game to keep the scent alive, the friend of the dinner-giving touter must have his stomach kept well filled if he is expected to run down the game. Besides, many swallow the bait, but will not allow themselves to be hooked. They will partake of the touter's hospitality, appreciate the dinner, speak well and drink deep of the wine, eulogize the kindness of the host during the process of the banquet, but forget the main object for which they have been crammed and feasted, viz. to impress their friends and acquaintances with a due sense of his professional ability. These thankless and unprofitable gourmands, although accepting and enjoying the

feast, frequently most ungraciously consult another practitioner in matters in which professional skill is required, and laugh in their sleeves at the overweening vanity and egregious folly of your professional dental gastronomic dinner-touter.

Notwithstanding all its drawbacks, there is little doubt that the touting dinner system answers the purposes of some practitioners, and brings around them a clique of men of uncertain professional character, who keep good living and frequent entertainments in view at the expense of reputation and discretion. The patron of the protegé become sometimes mixed up in the percentage system, (of which we shall have a few words to say on a future occasion,) and the result of which ultimately is exposure and disgrace to both.

We believe that in this, as in many other instances, the calling of professional and public attention to a discreditable system will go a great way towards correcting it—that the bringing the force of public opinion to bear upon professional abuses, is one of the most efficient means of putting them down, and we feel satisfied that the only true way of ensuring the respect of the profession and the public at large is to begin by exhibiting a proper respect for ourselves, to abandon all the artifices and tricks of quackery and pretence, and by so doing, we shall best raise the dental art to the high and honorable position which it is fairly entitled to occupy among the collateral branches of medicine and surgery.

R.

ARTICLE V.

On the Sensibility of the Teeth. By ALFRED A. BLANDY, M. D.

Every practitioner of dental surgery has observed the differences in the sensibility of the teeth of different individuals, and even in the same mouth. It is well known that all teeth are not affected alike by external impressions. The application of heat and cold to the teeth of some persons is productive of

severe pain, and the same may be said of acids; while upon others, it is attended with but little or no unpleasant sensation. The removal of caries from the teeth of some is attended with insupportable pain, while from others, it is not productive of the slightest suffering. The bone of some teeth, when exposed by the destruction of the enamel or recession of the gums is so very sensitive that the slightest contact of any hard foreign substance causes the most acute pain, while that of others does not seem to be endowed with any perceptible sensibility.

To what are these differences in the sensibility of different teeth attributable? Are they dependant upon constitutional idiosyncrasy, or upon the physical condition of the teeth themselves, or upon some peculiar pathological state of these organs? If of no practical importance, it would at least be interesting to have these questions satisfactorily answered. But it is not so much the purpose of the writer to do this, as it is to elicit the views of older and more experienced practitioners.

In the American Journal of the Medical Sciences of the present month, (October,) there is a short article copied from the Transactions of the College of Physicians of Philadelphia, vol. iii, No. 2, in which Dr. John Neill attempts to explain "the manner in which external impressions made upon the teeth are conveyed to the nervous pulp within." His explanation is founded upon the assumption that the teeth are not endowed with blood-vessels and nerves, and that dentine consists of tubules—an assumption, we think, altogether gratuitous, and by no means in accordance with the present state of our knowlege of the anatomical structure of these organs. Dr. Neill, also, takes it for granted that the old doctrine of increased sensibility of the teeth is the result of inflammation, is exploded—a position, we think, equally unwarranted and wholly at variance with the daily observation of every dentist.

After disposing, in this summary way, of the doctrine of the vascularity and inflammation of tooth-bone, or dentine, he states that the hollow tubules, which pass from the circumference to the center of this structure are filled with a fluid secreted by the pulp. "Now," asks Dr. Neill, "if the tubules thus

filled pass from the circumference to the interior of the teeth, may not pressure applied without, by compressing the enamel and the fluid of the tubules, affect the nervous pulp within, by subjecting the latter to a species of hydrostatic pressure, the amount of which can be measured?" He then goes on to say that, "whatever reduces the thickness of the enamel or uncovers any portion of the dentine, increases the painful impressions caused by external pressure. Thus acid, by removing the mucus by which teeth are ordinarily covered and perhaps a portion of the enamel, increases their sensibility to external impressions."

This, it must be confessed, is a most beautiful and ingenious explanation, but, unfortunately, we fear it will not stand the test of rigid scrutiny. If Dr. Neill's assumptions were all correct, however much his theory might be opposed to daily observation, it would, at least, carry with it a considerable amount of plausibility. But let us examine them, for a moment, in detail.

The first is, that "the old doctrine of increased sensibility of the teeth from inflammation has passed away." This, so far from being correct, is, we believe, held by nearly every dentist. The *hydrostatic pressure* doctrine of Dr. Neill, would, in the opinion of the writer wholly fail to explain the differences in the sensibility of different teeth, and even in different parts of the same tooth, apparently in the same pathological state, or, at least, so far as indicated by the physical condition and appearance of the organs and parts. For example, partially decomposed dentine, and even the surrounding sound bone are so exquisitely sensitive that the slightest touch of an excavator or file is productive of the severest pain; at other times, they are so totally devoid of sensibility that they can be cut away without causing the slightest unpleasant feeling to the patient. This difference is sometimes observed in different parts of the same tooth. Now, if the impressions made with the excavator or file, so compressed the fluid in the *supposed tubules* as to subject the pulp within "to a *species of hydrostatic pressure*, causing pain in one case, would it not be likely to do it in all

the teeth to which this instrument was applied? Most certainly it would.

The same difference is observed in the susceptibility of different teeth, and even in the same teeth at different times, to impressions from heat and cold and acids. But if this were not the case, and if all teeth, and at all times, were equally subject to impressions from these agents, it is difficult to conceive how the hydrostatic pressure theory of Dr. Neill would explain the manner in which they are made, unless it were by the expansion and contraction of the fluid contained in the tubules of the dentine, compressing the nervous pulp in the one instance, and causing it to expand in the other, to fill the partial vacuum formed in each tubule. But as this is altogether a gratuitous supposition, it seems to the writer, that until a more philosophical explanation is furnished, the nerves of the dentine must continue to be regarded as the media through which impressions made upon the teeth are transmitted to the pulp within. Admitting this doctrine to be true, it is easy to explain the cause of the difference in the susceptibility of different teeth, and in the same teeth at different times, to external impressions—depending as it necessarily does, upon the state of their nervous susceptibility at the time they are made. This is always increased by inflammation of the dentine, and it is also evidently influenced both by the physical condition of the organs and the state of the general system, often manifesting itself when the former are apparently free from increased vascular action. It is also often increased in a most wonderful degree by the action of acids, and especially after the dentine has become exposed by the destruction of the enamel or recession of the gums. There seems, however, to be some difference of opinion with regard to the manner in which this effect is produced. Some ascribe it to increased sensibility in the gums and alveolo-dental periosteum, and not to any direct action of the acid upon the teeth themselves. This opinion, however, is not held by many dentists of the present day, for it is well known that no increase of nervous susceptibility in these organs is produced unless the acid come in direct contact with them. The most probable,

and in the opinion of the writer, the only way by which this effect can be produced, is, by the action or union of the acid with the lime of the teeth, decomposing it upon the surface, and leaving the animal frame-work, which is the only part endowed with sensibility, exposed. The sensibility, too, of this exposed animal tissue is, no doubt, increased both by the action of the acid and its exposure.

Teeth are less easily affected by acids previous to the destruction of any portion of the enamel than afterwards, and for the reason, that this outer covering contains much less animal matter than the subjacent dentine; consequently it is endowed with less nervous sensibility. Teeth, too, after the dentine has become exposed, are more susceptible to impressions from heat and cold, and for the same reason. Hence, teeth that are partially worn away, or that have been filed, or filled with a metallic substance, metals being better conductors of caloric than tooth-bone, are more easily affected by these agents.

Acidity of the fluids of the mouth or stomach, is attended by increased sensibility of the teeth; consequently, any state or condition of the general system which favors the former, may be regarded as conducive of the latter. Hence the teeth of dyspeptic persons, and females during gestation, are peculiarly liable to be sensitive. The same, too, as a general rule, may be said of persons possessed of a high degree of constitutional nervous susceptibility—the teeth partaking in a measure of the condition of the general system.

The second assumption of Dr. Neill is, that "the teeth have neither blood-vessels nor nerves." As being in more immediate connection with what has been just said, it may be well to offer a remark on the last part of this proposition, before noticing the first.

Although anatomists have failed to detect nerves in dentine, with the best microscopes, their existence is inferred from the manifestation of phenomena which could not occur in a structure devoid of these organs.

With regard to the vascularity of the osseous portion of a tooth, the writer does not think that that admits of a single doubt.

The existence of vessels here has been fully demonstrated by Drs. Harris, Maynard, Tomes and others.* It is true, the vessels of dentine are so exceedingly minute, that they are only capable of conveying the serous part of blood, though red blood has been detected in some of them in several instances. Dr. Harris has given a colored engraving of the microscopic appearance of the half of a lower molar, in which vessels charged with red blood are distinctly seen.

But if the vascularity of dentine never had been demonstrated, there are circumstances which would seem to establish the fact very conclusively. It is admitted, we believe, by all physiologists, that the solid materials of the body are derived from the red part of the blood. Now if this be true, how can we account for the increase of density which dentine acquires subsequently to its formation. This increase, it is true, is never very considerable, but that it does take place, is, we believe, very generally admitted by dentists. The manner in which it takes place, can only be explained by supposing that some of the red globules of the blood are broken down into such minute particles as to be capable of entering the delicate vessels of the dentine.

Having shown, as the writer believes, the two first assumptions of Dr. Neill to be erroneous, he will conclude with a very brief notice of his views concerning the supposed tubularity of dentine. Now, although this doctrine is held by several eminent men, who have devoted much time and attention to microscopical researches, Mr. Nasmyth has, we think, demonstrated in the most conclusive manner, that the supposed tubes are, in reality, "solid fibres," composed, to use his own language, "of a series of little masses, succeeding each other in a lineal direction, like so many beads collected on a string." Mr. N. has also demonstrated that both the fibres and interfibrous material of dentine have a cellular composition.

Upon this particular department of anatomy, Mr. Nasmyth

*Vide Maryland Med. and Surg. Jour., vol. ii, p. 385; Lectures on Dental Physiological Surgery, by John Tomes, pp. 49 and 50; and Principles and Practice of Dental Surgery, 4th edition, p. 47.

must be regarded as the highest authority—he having devoted some ten or twelve years of his life to the investigation of the minute structure of the teeth and their formative organs. But while we award to Mr. N. this credit, we would not be considered as detracting from the merits of Dr. Neill and other eminent gentlemen, who have been engaged in similar researches, and who, by their industry and splendid talents, have contributed so largely to the advancement of science.

Now, in view of the facts which the writer has thus hastily enumerated, he thinks it must be admitted by all, that the nerves of the dentine are the true media through which external impressions are transmitted, either directly to the nervous center, or to the pulp within, and from thence conveyed to it.

ARTICLE VI.

Importance of Regulating the Teeth, and Employment of Gum-Elastic Rings in the Operation.

Dr. C. A. Harris:

Dear Sir:—I shall not readily forget our last meeting at Saratoga, where so commendable a feeling prevailed for advancing and elevating our profession.

The dentist is looked upon too much as a secondary character—one whose claims rest rather upon accident than legitimate science. This is an error; and yet it is an error easily explained. For a long time the teeth were neglected, and the first operators were doubtless mere mechanics. The surgeon was called upon if a tooth was to be extracted, but the idea of *repairing* the ravages of disease in these organs, is comparatively modern.

Perhaps the physical constitution in former times was more perfect, and less liable to disease or partial decay, than at pres-

ent. One is not apt to take any special notice of those parts of the system which occasion no pain; hence it is fair to presume, that no special care was taken of the teeth until they began to fail of their original purpose.

Thus it has been with the diseases of the body. Man has, by his imprudence and ignorance, not only added to the number every succeeding generation, but by his violations of the natural laws, has added to their aggravation; consequently, new labors are constantly before the physician and surgeon, rendering their lives one of perpetual study. How can it be otherwise with the dentist? He is now required to be well read in medical science—indeed to be worthy of a diploma of a medical college.

Whatever pertains to the teeth, whether we view them separately, or as parts of a various whole, comes within the limits of our profession. It is requisite that the dentist should understand the laws of their formation, and the condition of their preservation. In this respect, his services should commence with the child. To prevent disease is far more important than to cure it, both on the score of expense and comfort. This is, perhaps, a truth more applicable to our profession than any other. People cannot scrutinize their own mouths, or the mouths of others, unless they have the necessary knowledge; and hence their teeth may decay beyond *remedy*, or may grow so irregular as to defy the most consummate skill. The removal of a tooth in the child may secure regularity, prevent premature decay, and thus ward off the pain and destruction that is sure to visit the adult tooth.

Parents, therefore, cannot begin too soon to watch the growth of their children's teeth, and to seek the aid of the dentist. They should realise that this advice is not given for the purpose of increasing the labors of the dentist, but to lessen them. If he does more for the *girl*, he will be called upon to do less for the *lady;* and if he performs his duty to *the boy*, there may be no occasion for calling him to the *man*.

The business of regulating teeth is new to most people, and yet, when we consider to what expense some are willing to go

for comfort, convenience and appearance, it must become, in time, a very important branch of our profession.

But few have thought it practicable to alter what nature has done in the *arrangement of our teeth;* in fact, but few have given to the subject any consideration whatever. In every thing pertaining to the teeth, the dentist should have as full control as the physician has with the body of his patient. The child should be submitted to his judgment and to his skill. What he advises should be executed with the same promptness as the prescription of the physician.

I have been led to suppose that something might be contrived as a substitute for spiral springs, gold bands, &c. I have made, for experiment, rubber tubes, of different sizes and thicknesses, so that rings may be cut of any dimensions. No substance that I can think of, would be more likely to prove pleasant to the mouth, or less likely to irritate the tender parts; besides, by these tubes, we may have a great variety of means, *as to power*, in the simplest and cheapest form. We can commence with a small force and increase, or reverse the operation, according to the circumstances of the case.

The frame-work, made of silver or gold, may be prepared with hooks or clasps at different parts of the plate, so as to attach the loops with ease, by the use of two instruments, such as pluggers, stretching from tooth to tooth, whether near or remote. It is easy to conceive of a variety of operations with these *pulling rings*, and *to you* it is quite unnecessary to enlarge.

I only hope that the contrivance may meet with your approval. If it proves to be useful, I shall have great satisfaction in the belief that I have, in the smallest degree, contributed my mite to the stock of practical knowledge.

With much respect and esteem,

I remain your friend,

E. G. TUCKER.

Boston, *October* 3*d*, 1850,
No 4 *Hamilton Place.*

ARTICLE VII.

Adjustment of Clasps.

It has been justly remarked, in a late number of the "Journal," that clasps cannot be entirely dispensed with, in the insertion of partial sets of artificial teeth. Properly constructed atmospheric plates, have, to some extent, superseded the necessity of using them; but still, in a great many cases, they are undoubtedly quite indispensable. The objections to their use are very much lessened by their perfect adjustment to the teeth to which they are applied. To effect this object, it is, of course, necessary that we should have something more to depend upon, than the ordinary plaster model from which the plate is made. A number of plans, more or less useful, have been suggested for this purpose. That which I have found most satisfactory is, Fogle's strip, for confining temporarily the clasp to the plate; but I have lately fallen upon an exceedingly simple method, which, so far as I have tried it, has most perfectly answered the desired purpose. I do not know whether it is new, (it is certainly so to myself and to those to whom I have mentioned it,) or whether its success in the few cases in which it has been tried, has led me to over-estimate its advantages.

In taking the impression, I am only careful to secure a perfect impression of that part of the mouth to which the plate is to be fitted. After the plate is made and found to fit, it is fixed in its proper place in the mouth, with a little Venice turpentine, placed on the upper surface, the mouth being previously wiped dry. An impression is now taken and the plate withdrawn from the mouth with the wax. The Venice turpentine, as will be seen, serves to keep the plate in place during the process of taking the impression, but does not prevent it from leaving the mouth when the wax is withdrawn. From this impression a plaster model is made, which will show the exact relation of the teeth to which the clasps are to be fitted and the plate. With a model made in this way, I do not hesitate at

once to solder on the clasps permanently. I am always in the habit of forming the clasps upon castings made from impressions carefully taken of the teeth to which they are to be attached.

It may be asked: What advantage do you gain by taking a second impression with the plate in the mouth? Why will not the first impression, if correctly taken, answer quite as well? For the same reason, that the teeth of that impression cannot be depended upon for the perfect formation of the clasps. It is so important that the portion of the mouth, which is to receive the plate should be accurately taken, that is very difficult, if not quite impossible, to get at the same time a perfectly correct impression of the adjacent teeth. But after the plate is made, the attention and efforts can be exclusively directed toward obtaining a correct impression of the teeth to which the clasps are to be attached, which must be comparatively easy. It is, however, quite unnecessary to discuss this question; for the method suggested is so easily tested, that the matter may be at once settled, as such thing only can be, by active experiment, if the advantage to be gained is thought worthy of the trial.

A.

Washington City, D. C., *Oct.*, 1850.

ARTICLE VIII.

Hints on the subject of Artificial Teeth and Plates.

Mr. Editor:

Dear Sir:—Will you permit me to contribute a few items, for the benefit of students and young practitioners of dental surgery, on the subject of artificial teeth and plates. I have examined a number of works on this subject, and have come to the conclusion that authors have not written all they know on this subject, or they have not come up to the latest improvements in mechanical dentistry.

The first thing of importance I shall speak of, is the use of clasps.

My experience the last five or six years, has proved beyond a doubt, that they are used in many cases where there is not the least necessity for them, and to the destruction of one or more teeth.

I have seen three or four teeth confined by clasps in a mouth, where it was not necessary to use one. If our teeth are valuable in proportion to their number, then the information which I propose to give, will be acceptable to those who have not learned by experience, the true plan of preserving teeth from this unnecessary appendage.

There are certain circumstances where the clasp is indispensable, but experience has taught us that teeth can be inserted where there are many valuable teeth standing in the same jaw, without the use of clasps. They are also as useful in mastication, as those inserted on a clean gum, where every tooth has been extracted.

The following cases will illustrate the truth of this assertion, and can be inspected by any respectable member of the profession.

Miss P. has seven front inferior teeth of her own, the back teeth are inserted without clasps.

Mr. R. has three inferior incisors, two cuspidati, one bicuspid and one dens sapientiæ, the others in the lower jaw, are artificial and used without clasps, he has also fourteen superior artificial teeth and no springs. Mrs. M. has three upper molars, and ten artificial teeth in front of them without clasps.

Mrs. —— has one superior front incisor, one lateral, two canine, the others are artificial and used without clasps. Mr. A. has lost all of his upper teeth, except six in front, the molars and bicuspids are artificial and used in mastication without clasps.

Mrs. W. has ten gum teeth inserted in front of her upper molars, in the same way.

If the above should be acceptable, I shall next give my experience on the absurdity of using wide plates, for the purpose of adhesion, also the ridiculous large air chamber in the roof of the mouth, so much in vogue in this city. Another subject

of great importance in dental surgery should be corrected, viz. the filling of the six years old molars after the decay is very deep and near the nerve.

J. W. CRANE.

New York, *Jan'y* 10*th*, 1850.

Note.—The deleterious effects produced upon natural teeth by the application of clasps, is a subject to which the attention of many of the members of the profession have been directed for several years, and their employment has been much less frequent during the last four or five years than formerly. In vol. ix, No. 4, page 357, there is a well written article upon this subject, by Dr. P. H. Austin, and another by Dr. W. H. Dwinelle, in vol. x, No. 2, page 108, of the same journal. The attention of the profession is also directed to the subject in the American edition of Fox on the Human Teeth, and in the editor's Principles and Practice of Dental Surgery. Indeed, to such perfection, has the suction or atmospheric principle of applying artificial teeth been brought, that many practitioners dispense with the use of clasps in almost every case.

The injury to the natural teeth, is not, as many suppose, produced by the mechanical action of the clasps; it is the result of the chemical action of the secretions of the mouth retained between them and the organs to which they are applied. When the employment of clasps, therefore, becomes indispensable, the patient should be apprised of the importance of removing the piece several times a day, and thoroughly cleaning the teeth to which the clasps have been applied; also, of leaving the piece out of the mouth during the hours of rest. The injury liable to be produced is always in proportion to the softness of the texture of the teeth, and the unhealthy condition of the secretions of the mouth.—*Editor.*

ARTICLE IX.

Treatment of Exposed Dental Pulp. By H. K. NUTZ, Dental Surgeon, Philadelphia.

DR. C. A. HARRIS:

Dear Sir:—Much has been published of late respecting the treatment of the dental pulp. It appears that the arsenical preparations are held pre-eminent by many dental practitioners; but, sir, experience has taught me that very little permanent good has been obtained from the application of arsenic: on the contrary, it has been productive of much injury, for, in the majority of cases, it gives rise, sooner or later, to inflammation of the alveolo-dental periosteum, thereby producing the most intense pain, often followed by exostosis, and most frequently the loss of the tooth, besides generally causing nervous irritation of the general system.

In my opinion, it is doubtful practice to destroy the pulp in preparing teeth previous to filling; therefore it should be avoided as much as possible, inasmuch as it destroys the vitality of the tooth to a very great extent, and frequently causes their entire death.

Experience has led me to believe that the nervous pulps of the teeth are endowed with recuperative power, so that when wounded, cicatrization will take place, provided it is not followed by suppurative inflammation, and this I have learned from observation is not an inevitable result.

The following is the manner in which I have treated exposed pulps during the last twelve months, and with entire success. In the first place, I remove all loose matter from the cavity, then apply cold water three or four times in rapid succession, by means of a syringe with a curved tube. This enables me to benumb, in a measure, the pulp, and whilst in this state I cut off, with a suitable excavator, that portion of the nerve which is near the orifice of the cavity, without producing excessive pain. I then repeat the water, and continue its application

daily until I have deprived the pulp of much of its sensibility, taking care to apply a lock of cotton over the pulp, so as to protect it; this should be done after each injection. One week is sufficient to accomplish the healing.

I then proceed to fill the tooth, by first cutting a strip of gold foil, and folding it in such a manner as to enable me to lay a floor over the nerve-cavity, and then fill and condense the gold in the usual manner.

ARTICLE X.

Ninth Annual Meeting of the American Society of Dental Surgeons, held at Saratoga, August, 1848. Reported by William Henry Burr, Phonographer.

Second Day, 3½, P. M.

The chairman being requested by Dr. Harris to give some information with regard to the origin of the use of wedges, for separating the teeth, spoke as follows:

Permit me to say, that I have never attended any meeting of the society in which I felt an equal degree of pleasure and interest to that I did yesterday in the discussion of subjects connected with practical dentistry. If we can carry on the zeal and good feeling with which we have commenced, we shall attain to the high objects which first led a few individuals to the establishment of this association, improve our knowledge and advance the interests of others, at the same time, with our own.

It was remarked by Dr. Harris, that he believed I was the first who introduced the practice of using wedges. In the year 1820 I lost the crown of the first bicuspid tooth, and I had one engrafted upon its root, which I wore about four years, when the root becoming troublesome, I had it extracted. I then had one adapted to a gold plate, which I wore for the same length of time, when the adjoining root round which the

spring was secured became tender from the contact of the spring or from other causes. It then occurred to me that the second bicuspid might by pressure be made to take the place of the first, and in 1832, being in the country and having time to attend to it, I commenced the operation by introducing a small wooden wedge between that tooth and the first molar, and by inserting a larger wedge each subsequent day, I found at the end of about four weeks that the crown had completely taken the place of the one previously lost. By wearing the wedge for a length of time, from which I suffered no pain or inconvenience, the tooth maintained its position, and so continued for several years. On my describing the sensitiveness in the neck of the tooth, occasioned by the abrasion of the spring, to Dr. S. Brown, he proposed covering or protecting the exposed surface with mineral paste, which he said he had discovered a new mode of preparing, and a few days afterwards the paste was applied by Dr. B. In a short time the tooth became exceedingly painful, and I had it extracted. This was my first and only experience with mineral paste. The result of its application in my case being almost immediate inflammation of the gum and membrane, from which I lost the tooth.

On my return from the country in 1832, I commenced operating by means of wedges in front teeth, instead of filing them as I had previously done, and I continued to do so, believing it to be the most prudent and successful method of separating front teeth for the purpose of stopping on their contiguous edges or sides.

After I had been in this practice about a year or so, an incident occurred which led me to the belief that such a mode of procedure was not known and had never been performed until I adopted it. Miss T., then about twelve years old, came to me; her front teeth were decayed, there being cavities in depth about twice the thickness of the enamel. Her mother asked me if I thought it best to file, in order to stop them. I replied, that in so young a person, I did not deem filing advisable, and that I would open them sufficiently by means of wedges and then stop them, and that when stopped, the teeth would im-

mediately fall together again. The mother said that she had heard of my operating in that way for a young friend of her daughter's; and, that she had called upon her dentist that morning to have her child's tooth filled by him in that way, when he asserted "Madam, it cannot be done."

The lady replied, "Mr. Parmly has done it for a young friend of hers." The dentist, with great and emphatic earnestness, reiterated—"Mr. Parmly may say he has done it, but it cannot be done." After such a marked display of professional courtesy, I felt exceedingly interested in the matter, and with the lady's consent, I began wedging, and in a week or so, completed the operation by carefully stopping the two teeth. I then requested her to show them to her dentist, to prove to him that it could be done.

From that day to this, I have uniformly followed this practice in all cases where it would have been necessary after filing to cut into the sound portion of the tooth for the purpose of getting sufficient depth to retain the stopping, or where the nerve by such cutting might be laid bare, or so nearly so, as to endanger the vitality of the tooth from the pressure caused by introducing the gold. Two points are indispensable in stopping the sides of front teeth—space to enable the dentist to operate, and depth of cavity to retain the stopping. If that portion of the tooth is filed away, which if suffered to remain, would have given sufficient depth, the latter requisite must be obtained by excavating; and thousands of beautiful front teeth have been entirely ruined by these injudicious excavations, which might have been permanently saved if wedging had been at first employed to gain the space required, leaving the enamel entire as the surrounding wall of the plug.

I have rarely failed to obtain a smooth wall by taking off the thin edge of the enamel to such an extent that an even surface could be gained. It is now more than seventeen years since I first performed the operation, and I do not remember a single instance where the death of the tooth has been occasioned by wedging. I have seen the vitality of teeth sometimes destroyed that had been wedged, but a careful examination could always

trace it to the pressure of the gold upon the nearly or altogether exposed nerve. I do not claim any great merit for the discovery of the use of wedges; but I consider the process important and valuable alike to patient and the careful dentist.

About the year 1835, a young patient of mine was in Paris, whose father wrote to me that her two front teeth were beginning to overlap each other, and desired to know what I would recommend in such a case. I wrote to him not to have the teeth filed, but to apply wedges, and requested him to call upon Mr. Brewster. Mr. B. performed the requisite operation most satisfactorily without filing, and sometime afterwards I received a very excellent letter from him on the subject, making reference to this case and alluding to experiments which he had made with India rubber, which he advised me to try in similar cases.

Objections to this mode of operating that it induces irritation and inflammation have originated, I think, from means which have been injudiciously and improperly had recourse to. I knew a gentleman who is exceedingly nice and circumspect in his attention to his teeth. He has been for fifteen years in the habit of opening them by introducing folds of linen for the purpose of having them examined on their lateral surfaces without the slightest inconvenience or pain. I have worn wedges between my molars two and three months at a time.

We have many cases in which wedges are not required when the teeth are so much decayed as to make it necessary to cut away with the file or other instrument a considerable portion of the tooth. In doing this, sufficient room is commonly gained for the purposes required; but in such instances, I file no more than is absolutely necessary to procure a good surface, and if sufficient space is not thus obtained, a single day or so with a wedge will suffice to get all the width that may be needed.

My wedges are generally made of pine wood, but I have used hickory, cedar, dog-wood and India rubber with equal advantage, and in numerous cases, I have not used any thing with greater satisfaction than cotton, it possesses the double value of pressing aside the gum which sometimes partly covers

the cavity and it separates the teeth at the same time, thus enabling the operator to fill without annoyance from bleeding. The file may be used with benefit, and more freely upon the bicuspids and molars, than upon the incisor teeth; when well filed, so as to be kept apart, they retain their stopping better than when their sides approximate so as to touch each other.

I have within the last few weeks wedged the teeth apart for the puspose of examining them, of the lady who came to me at the age of 12, before alluded to, and found them as perfect, and free from decay, as on the day they were stopped, now about 16 years ago.

As regards filing I have had no reason to change my opinion of its importance, since the publication of my first little Brochuse, in 1820, according to the facts of my experience. I then regarded the file in the hands of the skilful operator a most valuable instrument, none more so, but it should be used with great caution, otherwise it is the most destructive of all implements, and has ruined more teeth than all others put together. I had a case of a child, probably about 12, the enamel of whose teeth was of that soft perishable character, that it seemed almost impossible to do any thing to save them. They could not be stopped, their sides being wholly decayed, but the decay had not as yet penetrated to any considerable depth. In order to get sufficient room between the teeth to enable her to clean them, I cut a large portion from the side of each tooth with a common sized round file, giving the teeth a wedge-like shape, the neck representing the thickest part of the wedge, and polishing the filed surfaces as well as I could. At that time, I did not believe that these teeth could last beyond a very few years, but ten or twelve years have now elapsed, and they remain perfectly good, and will probably continue so during life.

In moving teeth by wedges, I do not imagine that the point of the fang is stirred, nor have I ever known a nerve ruptured or injured by careful wedging.

It is now about eighteen years since Mr. J. Parmly made a little machine, not unlike a miniature windlass in form and

power, for the purpose of bringing a superior cuspidatus into its place, which fell completely within or behind the lower cuspidatus and first bicuspis. The operation of moving it occupied about three weeks, it was a large and firm tooth which had taken that direction from the temporary cuspidati not having been removed in time, which retained its place, covering or hiding from view the one in question until the lady was about twenty-eight years old, when it loosened and dropped out, leaving the very unsightly defect which we were then called upon to remedy. When the lady was about twenty, I proposed performing the operation, which at that time was declined as a thing impracticable, herself and friends having been previously told that "it could not be done." The tooth in question, was moved a greater distance, and at a later period of life than any one I have ever known, yet it remains firm in its socket to this day, while some of its neighbors have been lost from alveolar absorption.

It is necessary to caution our patients, as to the question of wedging, many are apt to suppose, from seeing it done, that it is a very small and easy matter; and I have had persons come to me with large pieces of wood forced between their teeth, thus opening up a gap to almost the width of an entire tooth. I have always cautioned such, not to use wedges without definite and proper directions, and I would recommend all others to do so.

Dr. Westcott here showed one of his first growth of teeth, which remained still, and asked Dr. Parmly's opinion whether it should be extracted.

The chairman said, if he was a patient of twelve years of age he would have it taken out.

Dr. Harris mentioned another case in point. A patient twenty-two years of age, had a cuspid tooth extracted; some six weeks after, he applied to Dr. H. for an artificial tooth, and it was set for him. Six months afterwards, a permanent cuspid made its appearance about a quarter of an inch behind the dental arch, but he succeeded ultimately in bringing it forward to its proper place.

Dr. Dunning wished to know Dr. Harris' experience with regard to the success of filling over exposed nerves—what was the advantage of the process of arching the filling over the nerve, to simply covering it with a cap.

Dr. Harris.—If it had occurred to me previous to leaving home, I could have brought some statistics upon the subject, which might be interesting to the society. Wishing to obtain all the information I can concerning any new operation, I have been in the habit of noting not only the number of operations of every kind, but the circumstances under which they were performed. In 1833 I performed for the first time the operation of filling over an exposed nerve. The teeth were two central incisors, and being unwilling to destroy their nerves, as I believed that by so doing, the chances of their permanent preservation would be lessened, and as I had frequently failed of success in capping the nerve, I determined to fill without doing it. I did so, and the teeth remained healthy and sound for nearly seven years. I did not, however, repeat the experiment again for several years, deeming it a somewhat hazardous experiment. At length, however, I performed the operation again, but this time it proved a failure, inflammation supervened, which ultimately terminated in the suppuration of the lining membrane. Some years after, I repeated the operation and was successful, and until August, 1846, I had performed it, perhaps about twenty times, and fourteen with success. Since that time, I have been more successful and during the past year, I have had to extract only three teeth treated in this manner.

The success of the operation not only depends upon the care with which it is performed, but also upon the absence of pain and inflammation at the time.

Dr. Westcott inquired if Dr. Harris filled teeth in this way, that came to him aching?

Dr. Harris.—Never. I never perform the operation when the lining membrane is inflamed. In such cases, if the preservation of the tooth is of great importance, I remove the entire contents of the tooth, either with an instrument immediately, or first destroy the vitality of the pulp with arsenic and afterwards

remove it, and fill the entire pulp cavity. Capping the nerve when it can be properly done, is quite as good as my method, but the amount of skill required is such, that I do not succeed as often in this way as the other.

Dr. Asa Hill stated that he had a tooth capped about a year ago, by Dr. Foster, and it had been preserved as well as any tooth in his jaws.

Dr. Rich inquired what means Dr. Harris took to keep the cap in its position?

Dr. Harris replied, that he cut a groove or bearing for the cap in the walls of the cavity, then fitted it in such a manner as to prevent it from being easily displaced or moved by the introduction of the foil. But for the last three or four years I have not found it necessary to apply a cap previously to the introduction of the gold in a single instance. Dr. Rich inquired if a cap of polished gold plate could be so placed that it would not move during the filling of the cavity, if it would not be a better surface to be presented to the exposed nerve, than the rough one, that is presented where the arch (or cap) is formed by the filling, in the manner you have described?

Dr. Harris.—It is possible it might, yet in most cases the cap occupies so much room, that as a general rule, a filling cannot afterwards be as substantially introduced. Dr. Koecker was the first to recommend capping, but he employed sheet lead; from the supposition that it possessed anti-inflammatory properties. I believe, however, that Dr. Fitch was the first to apply caps of gold.

The chairman here mentioned that his brother had used caps before Dr. Fitch published his work.

Dr. Rich.—I frequently fill teeth where the nerves are exposed. In such cases I use a gold cap to protect the nerve from pressure. I never find it difficult to place and retain the cap where I want it.

I will describe the manner in which the cap is made and placed over the nerve. I make a convex cap of polished gold plate, of such size and shape that it will rest upon the solid bone which surrounds the orifice opening into the cavity of the

nerve. I fit this accurately, and polish and burnish the edge. For placing the cap over the orifice, I use a small instrument of steel wire, eight inches long; about two inches of this is drawn or filed down, to form a shank about the size of a number six sewing needle, and is left untempered, to allow of its being bent. The point is bent round, so as to form a small ring or eye, of such size that an ordinary sized knitting needle will pass through it; the shank is then bent close to the eye, so that the eye will stand at a right angle with that part of the instrument which forms the handle. Where it is necessary to place the cap in the required position, I bend the shank of the instrument just described to the proper form, and dip the eye in melted wax, and while the wax is warm, attach the instrument to the convex face of the cap, which is then placed in the proper position, where it is held firmly, and gold foil packed around the edge of the cap until the cap is secure. The small instrument is then detached from it, and the wax carefully removed. At this stage of the operation, the cap presents the appearance of a jewel in its setting, and in fact is secured in the same way. After the wax is removed, gold foil is packed in and condensed until it is level with the apex of the cap. This generally occupies from one-third to one-half of the depth of the cavity in the crown. The gold foil thus introduced is then levelled and burnished, and forms an even solid floor to the main cavity, which is then filled up the same as any ordinary cavity.

By the method just described, the gold with which the cap is secured in its place, or the setting of the cap as it may be called, is entirely distinct and separate from the top layer with which the rest of the cavity is filled, so that in case any part of the top layer should be displaced, from accident or design, it would not interfere with the cap. I never attempt to treat a nerve in this way, unless I expose it myself. Slight hemorrhage sometimes follows the exposure; yet, in my practice, the operation rarely produces inflammation. I have often exposed the lining membrane without producing hemorrhage. With a good light and a steady and delicate hand, the membrane can be exposed five times out of six without hemorrhage.

Dr. Harris wished to inquire, in this connection, about the effect of cicatrizing the nerve with a hot iron, and then filling. For his own part, although highly recommended by Dr. Koecker, he was disposed to believe that it would be followed by inflammation and suppuration. The effort of nature to restore the injury, he thought, would produce this state of things.

Dr. Rich said, that in cases where he had tried it, it produced that effect five times out of six. He wished to inquire if there were not others who had exposed the nerve without hemorrhage.

Dr. Dunning said that he had seen nerves exposed by the excision of roots, preparatory to the insertion of pivot teeth, and afterwards filed up by the stump file, without hemorrhage.

Dr. Harris said, where vessels were ruptured by violence, they generally contract so as to prevent hemorrhage; whereas, if severed with a sharp instrument, they generally bleed. He had known one or two cases where there was no perceptible discharge of red blood.

Dr. Foster did not conceive it to be important, in making a cap to cover an exposed nerve, that the edges should be made round and smooth, but rather that they should be left rough and uneven, and so adapted to the parts of the cavity upon which they were to rest, particular care being taken that the size and form are in due proportion, as to secure it in its proper position. He had been successful, in a large majority of cases, in preserving the tooth alive. Whenever the death of the nerve ensues, he attributes it more to irritation from heat and cold, than from pressure; he had come to this conclusion from the fact that, in greatly increased proportion, he had lately been successful in treating these cases, owing, as he believes, to this precaution, viz. placing some substance, which is a non-conductor, between the exposed nerve and the concave surface of the gold cap. For this purpose he had used some of Dr. Hill's composition, warming it, and compressing a very small portion with a convex instrument, into the concavity of the cap. Cases of inflammation and death of the nerve under this treatment had rarely occurred, and he had practiced it for several months

past. He could not call to mind more than two or three unsuccessful operations. Lead cannot be placed in a cavity of sufficient thickness to prevent its bending under the force applied to secure a solid filling. He concurred with Dr. Harris, that no circumstances could warrant the filling of a tooth in the ordinary way, when the nerve is exposed, or nearly so. Inflammation and death of the nerve, as well as intense suffering, must inevitably attend such an operation. He believed the nerve of a tooth could not be exposed so as to be touched in the slightest degree in excavating a cavity, even when the diseased portion was removed with the utmost care, without bleeding.

Dr. Westcott concurred with the gentleman in the last remark. The cavity of the nerve takes the form of the crown of the tooth, so that it comes to smaller points. In excavating a cavity, you generally first ascertain that you have struck the nerve, by a small streak of blood from one of these needle-points of the cavity of the nerve. Whenever this happened in excavating, whether from necessity or accident, he considered it a great misfortune, almost certainly involving the ultimate destruction of the nerve.

Dr. Dwinelle.—I had formerly entertained the opinion, that to expose the nerve-cavity was to warrant the destruction of the nerve. For the last two years and a half, my attention has been particularly directed towards restoring teeth whose nervous pulp had been exposed. I used sometimes to encounter the little oozing of blood which Dr. Westcott mentioned, and it gave me the same apprehensions. Whenever I have done so, I have considered the immediate or ultimate destruction of the nerve as certain. Of late, however, I have attempted to save the nerves whose membranes were broken, and have generally succeeded. About two years ago, I was filling a tooth for a young lady, when I discovered that I had cut off a minute corner of the nerve. I immediately dipped a piece of cotton in a strong solution of camphor, placed it in the cavity, and checked the blood. I filled the tooth carefully, watched it afterwards, and believed it did not die. She suffered no pain

after the operation. I felt so interested in the operation, that about six weeks ago I took out the filling, and found the cavity sound and healthy. I even went so far as to excavate around the point of the nerve, and found that there had actually been a deposit of bone over the exposed nerve. This will not appear incredible, when we reflect that in aged persons the nerve-cavities are frequently filled with bone. With regard to Koecker's operation of using lead caps, I concur with Dr. Foster, that they may be so bent down by pressure in filling, as to come in contact with the nerve, and thereby become as objectionable and ruinous to the vitality of the tooth as would be the gold itself, except, perhaps, so far as lead may have the advantage of having the medicinal quality of being anti-inflammatory, gold being wholly inert. I have found the various preparations of lead very useful in subduing inflammation of the bone and nerves of the teeth.

Dr. Dwinelle suggested the application of some non-conductor under the cap, next to the nerve, to prevent cold or heat from affecting it—floss silk for instance.

Dr. Foster said that he had mentioned, in his preceding remarks, that he had applied Dr. Hill's composition, which was a non-conductor.

Dr. Dwinelle mentioned that Dr. Maynard had performed a like operation, applying beeswax under the cap.

Dr. Cleveland.—With regard to using a non-conductor, I will state that I have used asbestos for nearly three years. It was first presented to my notice in the office of a gentleman of Havana. I had been with him about a month, when one day he was filling some teeth in which he used asbestos. He turned to me and asked if I ever used the article. I said I had not, but now saw the utility of it. I have since used it in probably twenty cases, and cannot call to mind one single instance where I had to remove it.

Dr. Harris.—There is an article in the first volume of the American Journal of Dental Science, by Dr. Solyman Brown, in which asbestos is recommended for this purpose.

Dr. Rich had tried the article, and it proved a failure.

Dr. C. O. Cone rose to present some remarks of Dr. Nelson on this subject, which were contained in his report on practical dentistry; the extract read, was to the effect that oiled silk at the bottom of the cavity was a sufficient non-conductor.

Dr. Rich.—Recommended gutta percha as a non-conductor. A thin layer to be placed between the bottom of the cavity and the filling. He said he had known many valuable teeth lose their vitality from the sudden transmission of caloric; he was confident that this might be prevented. He had lately used gutta percha for that purpose, with entire success. In several cases in which it was used, there was but a very thin partition of bone between the external cavity and the nerve. In his opinion, it was superior to asbestos, or any other substance which had been used for that purpose.

Dr. Harris suggested a solution of gutta percha in chloroform, the latter he thought would allay the irritation, and as it would evaporate immediately, a thin layer of the gutta percha would adhere firmly to the walls of the tooth; this was the suggestion of the moment, but he was of opinion it might be applied in this way with advantage.

Dr. Nelson stated that he had sometimes exposed the nerve without bleeding, but it was, he believed, owing to morbid action, the diseased bone being separated from the membrane.

Dr. Rich thought a great deal depended upon the delicacy of touch in the operation, whether hemorrhage took place or not.

Dr. Cleveland remarked, that since the introduction of chloroform he had made some experiments with it in excavating tender cavities. He thought to himself, if chloroform will destroy nervous sensation in the whole body, why will it not allay the irritation if applied to the tooth. The experiment was tried and with success, since which time he had resorted to chloroform, and with invariable success.

Dr. Harris corroborated the testimony of its utility by a number of experiments which he had made.

Dr. Rich stated that the discovery of chloroform had scarcely been published before an advertisement appeared in a New

York paper, of a combination of chloroform and something else to prevent tooth-ache.

The society then adjourned, intending to resume the conversation on the following day, by taking up the "best method of applying arsenic."

Third Day.

Dr. Foster.—I did not experiment with arsenic until a long time after it was used; all that I heard respecting its effects influenced me against it. It was about two years after it became a general agent for the purpose of destroying nerves that I first tried it and according to the usual method. I applied it in a few cases, but the results were any thing but satisfactory, and after a few trials I abandoned it. Soon after Dr. Maynard returned from Europe, meeting him one day in New York, and mentioning this subject, he remarked that he would when an opportunity offered, give me an insight into his peculiar method of using it. This information I never have obtained any farther than to know that he was using it in smaller proportions than others did. I commenced trying it upon this principle, in about the proportion of two grains of arsenic, to eight of morphine, and have generally succeeded in destroying the nerve keeping it in ten or twelve hours without much pain in some cases, and without any in others. When pain has ensued, I think it attributable to the pressure of the substance used to keep the arsenic in the cavity, and that a cap placed over it would prevent suffering.

Dr. Westcott.—As I have heretofore given my views, and particularly my objections in the Journal, in regard to the use of arsenic, for the purpose of destroying nerves, it is but justice to myself, to state that time and the information derived from others, who had been more successful in its employment, have somewhat modified the opinions set forth in the article to which I have alluded. This was written in the summer of 1845, and up to this time my own experience had been such as to elicit the opinions therein set forth. I need not here repeat the objections I then believed lay against its use.

I now only desire to say that I, at the present time, look upon the employment of this substance somewhat more favorably, or, in other words, I have to some extent, been enabled to overcome many of the objections then entertained, by adopting the mode of operating of one who had bestowed very great thought and attention to this very important branch of our profession—that of saving teeth after the nerve had been exposed. The practitioner to whom I allude is Dr. E. Maynard, of Washington City.

I had the pleasure in the winter of '46-'47 of not only examining many operations which he had previously performed, but in one case witnessing the performance, and I confess I obtained some new ideas upon this subject which have been of great value to me in my subsequent practice. For nearly two years previous to the time of writing the article alluded to, I had utterly refused to use arsenic in any case, but since comparing notes with Dr. Maynard, I have, though I must say very cautiously, used it in many cases, and in a majority of them with success so far as I now know. I described briefly his "modus operandi" in an article entitled "a Visit to Washington," and which was published in the March number of the Journal, 1847; and as most of the members present have doubtless seen that article, I need not describe it here.

About a year and a half has elapsed since, during which time I have continued to experiment with this substance, yet at no time with as satisfactory results as I could wish. If the only object was to avoid, or to diminish the pain of destroying nerves, then arsenic deserves the highest eulogy, as my own experience proves; pain scarce ever need be inflicted in destroying a nerve. But in reference to the ultimate result, the health and safety of the tooth, it has been by no means as certain, as destroying the nerve at once with an instrument. However humiliating it may be, I am bound to say that in my hands quite a large proportion of these operations, where arsenic was employed, have resulted in the formation of alveolar abscesses, and I think the proportion is at least three to one, as compared to the unfavorable cases, where the nerve was removed by an

instrument. It is indeed a very rare occurrence to have abscess result from removing a healthy nerve with an instrument. It is frequently the misfortune of the dentist to be only able to choose between *evils*, and fortunate is he who always selects the least. In this light, and in this light alone, can we view the operation of destroying nerves by whatever method it is effected, for at best it so far weakens the vitality of the tooth as to render it *in all cases liable* to prove uncongenial to the surrounding parts. But even admitting this contingency to pertain to every case, yet it often is true that the destruction of the nerve, is by far a less evil than extraction, and still less than would result by leaving the tooth with an exposed nerve.

Dr. Harris,—Did not know that he could throw any additional light on this subject. Soon after Dr. Spooner of New York published to the world his application of arsenic to exposed dental nerves, he was led to make some experiments with it, which, however, did not induce him to continue the practice very long. But about the year 1839, he began to repeat these experiments, and from that time to 1842 or 1843 had applied it, in perhaps three hundred cases, for destroying the vitality of the pulp previously to removing it, in order to fill the cavity of the tooth. During this time he had an opportunity of examining the results of cases in which arsenic had been used by other practitioners in Baltimore, and other parts of the United States. In at least three out of four cases, alveolar abscesses resulted within from three months to two years. He was again induced to abandon the use of this agent, believing that it rendered the teeth obnoxious to the surrounding parts. After Dr. Westcott's return from Washington, hearing his description of the elegant manner of operating by Dr. Maynard, he was again induced to repeat the operations. Since that time, he had applied arsenic to about twenty teeth, in the mouths of persons whom he felt sure of seeing again, and of ascertaining the result, and he must say, that he had been more successful than he anticipated. He had also filled some eight or ten teeth in which the nervous pulp had previously been destroyed by suppuration, after having brought about a healthy action in the parts at the extremity of the roots

from which a morbid fluid was secreted. He had thus far succeeded in a majority of these cases. In one case, that of a lady from South Carolina, he filled the pulp-cavities and roots of the upper cuspidati. These teeth had previously given rise to alveolar abscesses. The roots were carefully cleansed and injected with a solution of chloride of soda for three or four successive days, when they were filled. Two weeks after, a small abscess or gum-boil formed over each, which soon broke and discharged. Although the presence of the teeth are productive of a small degree of irritation, they are less hurtful and more useful than artificial teeth. In some three of the other unsuccessful cases, there has been similar small abscesses, but the morbid effects attending them were not sufficient to cause any manifest inconvenience. A few days before he left home, he examined a molar filled by Dr. Cone. For some two or three weeks after the operation the patient suffered a slight degree of irritation, but it has not subsequently occasioned inconvenience. My manner of applying arsenic, said Dr. H. is simply this: I take one grain of arsenic and one of sulphate of morphine, mix them together and divide into thirty powders, I then moisten a small particle of cotton with water, sometimes with creosote, and sometimes with laudanum and absorb as much of this minute powder as I can upon the cotton. Having previously exposed the nerve, I put this in contact with it, and then seal up the cavity with wax. I rarely permit it to remain more than seven hours.

Dr. Dwinelle.—When I commenced the practice of my profession, for what I then considered good and substantial reasons, I was opposed to the use of arsenic. My prejudice arose from the fact of an acquaintance of mine having been killed by a quack, in treating a cancer with arsenic; also from the fact that several of my friends were laboring under disease of the jaw and alveolar abscesses, occasioned by arsenic having been applied to their teeth. I ultimately found that a substance more powerful than creosote was desirable, if safe, and I commenced experimenting with arsenic. I used it with caution, in minute quantities, sealing up the cavities with wax and cotton. I was not always successful. At times its use was wholly un-

accompanied with pain, and with the best results; experience rendered me more perfect and successful, but I was never decidedly confirmed in the use of it, till I had a conversation with Dr. Maynard on the subject. My experiments with this article, since that time, have been almost invariably successful. When it has produced alveolar abscess, they were but slight, making usually but one discharge, and then healing up permanently. But after all, I prefer the method of destroying nerves with instruments. It is my conviction, that in most cases an alveolar abscess is less likely to ensue when you take the nerve out bodily at once, and fill the internal cavity with gold, than when you give it the more protracted treatment with arsenic. I finally made up my mind seldom to use arsenic, and then in the manner described. I never mix creosote and morphine in any relative proportions. I do not let it remain more than twenty-four hours at a time, being afraid of its poisoning influence extending beyond the nerve.

Dr. Dunning asked, if in his opinion, the absorbing powers of the nerve continued after it was dead, so that the arsenic could be taken up?

Dr. Dwinelle.—The nerve is impregnated with arsenic, and when it is dead, I think the arsenic, if left to itself, will produce manifest disorganizing effects at the extremity of the tooth. I know a lady, one of whose superior molar teeth, below the crown, is completely riddled by arsenic. The carious cavity was filled with arsenic, and renewed after the nerve was killed, from day to day, to cure the *soreness;* and finally the dentist(?) in his despair, filled the cavity with arsenic, and completed the operation with tin foil. The root of the tooth is riddled like a honey-comb.

Dr. Cleveland.—In the plunging system, supposing a molar tooth decayed upon the posterior portion, while the crown is solid above, and you wish to destroy the nerve around the fang, how do you reach the whole extent of the cavity of the root?

Dr. Dwinelle.—I use Dr. Maynard's instrument of untempered steel, filed down to the fineness of a horse-hair. This

instrument can be bent into any shape, and you have only to crook it over the arch or border of the cavity. The nerve is, I believe, less sensitive as you approach the point of the fang. Dr. Dwinelle here described an instrument invented by Dr. Maynard, for the purpose of removing particles of extraneous matter from within the tooth. It was prepared with a succession of barbs at the point and sides, like a barley beard, in order to draw out foreign substances. When I have exposed the nerve, in removing the crown of a tooth, for instance, I make it a point to seize upon that moment to destroy it, for the purpose of gaining ingress into the nerve without much pain, as the concussion of the operation benumbs the nerve for the moment. I apply a very little concentrated creosote, which enables me to enlarge the orifice sufficiently to get an instrument into the cavity. If practicable, I enlarge the cavity with a conical or V shaped burr, and then plunge in the instrument and destroy the nerve. With regard to there being a small alveolar gathering afterwards, I quote Dr. Maynard as authority, who says he finds one of these occasionally after an operation, but that it never occurs a second time.

It was here suggested that the Society should listen to Dr. Hill's description of his composition for fillings; but inasmuch as the materials composing it were not to be made known, any remarks from Dr. Hill on that subject were deemed not in order.

The next part of the subject proposed for discussion, was the best manner and material for polishing the bone.

Dr. Dunning was in the habit of polishing with prepared pumice stone, using a stick of red cedar—an ordinary pen-holder. In reducing the inequalities on the surface of the stopping, he frequently used the stone of Ayre, which is obtained in the hardware stores.

Dr. Westcott had used the Arkansas oil-stone. The only objection to it was that it was very apt to get cloggy; if that could be obviated, it would be the best thing possible. He took pains to get it in thin strips, so as to use between the front teeth. It gives a fine polish, but tires one's patience in using. The Scotch stone would be quite as good, if it could be obtained in as thin slips.

Dr. Cone had found an article known as leather wood, which is procured in the south, and is very porous. This being first put into warm water, and then dipped into a solution of glue or size, with flour of emery of various degrees of fineness, make a beautiful material for polishing. I have sometimes used even rotten-stone in this way. In completing the polishing operation, I use floss silk. In this I may appear more nice than wise. I wish here to make an inquiry. In the microscopic examination of the teeth, we know that decay commences first on the inner side of the tubes. Now the question is this: is the unequal surface, by the retention of extraneous matter, the sole cause of its more rapid decay? It is undoubtedly an important cause, but is it the whole cause? And must not these open tubes, (microscopically speaking,) though polished as fine as possible, be left open for the action of foreign matter? And if not, how are these partially closed by the finer materia used, which we know to be the fact?

Dr. Harris.—After the file scratches have been to a considerable extent removed by the polishing material, the subsequent process employed in smoothing the surface, has a tendency to close up the mouths of the tubules, or rather of the cellules for I am inclined to believe the doctrine of the tubularity of dentine erroneous. For example, I find this hollow cylinder of my pencil too large to retain the part which slides into it. By simply rubbing its orifice with a burnisher, I close it sufficiently to retain the other part; just so the mouths of the open cells of the teeth are, at least to some extent, closed.

With regard to the various materials used for polishing, I have employed Arkansas oil-stone prepared in thin slips, but the difficulty mentioned by Dr. Westcott is a very serious one, for, in the course of a year, one would break and destroy perhaps fifty dollars worth. A few months ago I had some reduced to a very fine powder, which I have been in the habit of using on thin slips of wood, and on floss silk moistened with water. This is far more economical; a thimble-full lasting a long time. It requires a vast amount of labor, however, to reduce it to a sufficiently fine powder, and can only be done on a slab or in

a mortar. It might, perhaps, be done by heating to a red heat and then plunging it in water, but I am disposed to think the sharp angles of the particles would be injured by such treatment.

Dr. Dwinelle.—Inasmuch as my predecessor has led off into the field of theory, permit me to follow in his footsteps, and speak of the osseous deposit mentioned by Dr. Cone. He seems to assume that when the surface of the bone is polished, the diameter of the tubuli is not as great as when broken or uneven. Suppose we take a piece of enamel, which, in fact, is like a honey-comb, with the angles broken and uneven. When it is filed, it presents a succession of acute angles—a velvet surface such as we give to a gold stopping when we want it to assimilate in tone to the surface of the tooth. We now use a finer file, and we leave an undulating surface, the tops of the acute angles being cut off. We next use pumice stone, and it is not, *critically* speaking, reduced to a plane yet, there is now a succession of cylinders, like the Giant's Causeway, microscopically speaking. So we proceed till we give a complete polish. Now, I ask, have we not reduced the real given surface? Examine that polished surface, and you will find the diameter of the tubuli just as broad as before? but you have reduced the actual surface and overcome the capillary attraction of its broken tubuli. To show the delicacy of this attraction, let us take to the process of lithography. Take a broad lithographic polished stone; you execute the drawing with a crayon composed of wax, tallow and lampblack; you pour on sulphuric acid, which etches it all but where the wax lies; you now take a wet sponge and rub over the stone, and the capillary attraction causes the water to be retained sufficiently on the etched surface to repel the ink from the roller. This shows the force of capillary attraction on a rough craggy surface. In the rough filed surface of the tooth-bone, the fluids and food are retained by capillary attraction. With regard to the question at issue, I have used but few substances for polishing teeth. Ayrshire stone I can generally whittle down for the occasion, but it soon wears away. Pulverized pumice is excellent to precede it. I have not used Arkansas oil-stone

much, on account of its clogging; oiling it will carry off the substance accumulated, but this makes too dirty an operation. I have long used another very convenient article—a little file used by jewellers. I have seen the same on Dr. Parmly's and Dr. Dunning's tables; it is very fine and flat.

Dr. DWINELLE, at the request of several members, now proceeded to describe his process of bleaching dead teeth.

Dr. D. prefixed his remarks by saying—Who of us have not had our better feelings and our conceptions of beauty and harmony shocked, at seeing a dead black tooth in a dental row of living and sparkling ones, like a jet in a setting of pearls. At first sight, it often strikes one as a *deficiency* altogether, but on a second, we find the foul spot has a fadeless and permanent hue, enough to excite the envy of a Chinese beauty.

Although these instances are comparatively rare, yet they are sufficiently frequent to keep our indignation and regret in a decided state of health and activity—indignation, at the blundering operator, or regret, for the accident which caused the "dark transaction!"

These deformities are often of such decided and unpleasant character, that the unfortunate subjects of them often seek relief in having the dead member dislodged, and an artificial one placed in its stead. Up to within a few years past, I have, occasionally, in some extreme cases, yielded to the solicitations of my patients in this respect, but ever with unpleasant reflections and doubts exceedingly annoying. I have ever been impressed with the idea, that the sacrifice was too great, even for beauty's sake; for oftentimes, even though the tooth is of ebon shade, it is comparatively sound and as firmly set in the alveolus as its pale-faced neighbors.

Abscesses and fistulous openings are often associated with the kind of teeth under consideration; in attempting to cure these, we accidentally discovered a method of restoring the teeth to their natural whiteness and beauty.

Premising that all present know that the teeth are of such porous texture and quality that they are capable of being injected, and that the discoloration of which we speak, is occa-

sioned by the dead blackened nerve in a semi-fluid state, being disseminated throughout the bony structureof the tooth. I will proceed briefly to recount my remedy.

To illustrate, I will refer to one or two of my earliest cases. Mrs. ——, a lady, residing in Cazenovia, had a superior frontal incisor plugged with gold by an unskilful operator, about ten years ago. The operation was exceedingly painful, according to the representation of my patient, the filling at the time being applied directly to the exposed nerve.

She suffered much for a number of weeks, and soon after the pain subsided, a large protuberance was raised in front which pressed out the lip and even gave the nose a permanent elevation, as in the case of a swelled face, very much disfiguring her countenance. While I was operating to discharge the reservoir of matter which caused the protuberance, I suggested to her that I would like to see what I could do towards bleaching this tooth as well as to cure the abscess and reduce the protuberance. She gave me permission to do so, and I proceeded to drill through the sound part of the tooth, leaving the lateral fillings as they were. I drilled into the nerve cavity, and with a hoe-shaped instrument I drew out a quantity of pastry substance, something like ink; I then washed out the cavity with a solution of camphor, and filled the root with cotton from the apex down to the pulp-cavity of the tooth; I then cleaned it out as much as possible, and for experiment, introduced cotton of various colors, to see how much the tooth was whitened. The yellow cotton produced the most natural color, yet there was a dark, dead medium. I then filled up the cavity with a solution of lime and sealed it with white wax. She came next day. I took out the lime-water, found it was considerably stained; but the tooth looked better. I removed some more of the internal surface by scraping, and continued the application of lime till I thought something else was required. I next introduced soda by way of change, alternating too with chloride of lime. After having completed this process, I filled the tooth to the extremity with gold, using a very fine instrument, filling every point, water and air tight. I then

closed up the cavity and went to work at the outer suface of the tooth, taking off the surface, which was even darker than on the inside. I at length succeeded in raising the color of that tooth to as high a tone if not higher than its neighbor at its side, In the course of about two months, however, it subsided a shade darker; but it is now as much whiter than before, as gray is whiter than charcoal. This is one of my comparatively unsuccessful operations. I had another case where the tooth was as black as this, which I challenge any one to distinguish from others around it. There are cases where I cannot succeed as well as I could wish. I operated on the teeth of two sisters in one family, and succeeded beyond my expectation. I brought the teeth up from a dark, snuff color, to a rather rich golden white. They were very much gratified, and consider the operation entirely successful, which I do not.

Previous to my attempting to bleach teeth, I had not heard of the operation, and know that I was the first to practice it in my vicinity.

It has been my good fortune to restore a large majority of the stained teeth which have passed through my hands, to their original color and beauty. I regard it as an operation which, in proper hands, promises much, and I feel sanguine when I make the declaration, that a little perseverance, aided by a common share of skill, will greatly improve, if not completely restore, four cases out of five. Should my friends attempt the operation, I trust they will persevere, and not predicate the success which surely lies before them upon one or two of their first failures.

Dr. Dunning inquired if he had tried it where amalgam had discolored the teeth.

Dr. Dwinelle said he had not.

He then inquired if it would not be well to cut a great deal from within the tooth?

Dr. Dwinelle said he did so. When I have finished bleaching the tooth, I try the effect of gold foil on the inside to see to what pitch I have brought it. I had almost forgot to mention in regard to the first case that I cut out the protuber-

ance, healed up the sinus and the lady's nose has assumed its natural character.

Dr. Harris said he had tested the bleaching qualities of chloride of lime and soda, and always kept a bottle of one of them containing a solution for this purpose.

Dr. Foster related a case of a lady who had the misfortune to have a dead front incisor so long neglected that its blackness almost deterred him from the hope that it could be restored in strength or color. All the other teeth in the mouth were perfect in number, and of that beautiful pearly white texture, so rarely seen. After a long and very laborious process of excavation, the blackness was entirely removed, and the tooth filled into the nerve cavity. He then found the whole front surface of the crown of the tooth so thin that unless some intervening substance could be placed between the gold and the enamel, so as to restore the color of the tooth, his labor would be in vain, for it would be a gold tooth in color as well as weight; upon placing a small piece of a newspaper under the front surface from curiosiy he could readily distinguish the letters through the enamel. This suggested the experiment of trying other paper, and a piece of blue letter paper, cut to the form of the thin surface of the enamel, but not allowed to extend quite to the edges of the cavity, was found to answer the purpose, and when the gold was pushed carefully under it and the operation completed, the difference in point of color was hardly observable. This operation was performed the week previous to this meeting, and its ultimate utility undetermined, but the chances of an unfavorable termination, cannot, he thinks, be increased by the use of the paper, provided it does not extend to the edges of the cavity, and the filling is so firm and compact, as that moisture shall not reach it.

Dr. Rich had tried the same experiment, only he had used tissue paper, which was not so good.

Dr. Westcott had lately treated a tooth which was perfectly dead and extremely discolored. He drilled into the tooth, wound the apex of the syringe with cotton, to prevent the fluid from running back, and thus forced the fluid through the apex

of the tooth. He did not like to trust the other method of cleaning, as foul matter was liable to be left at the end of the root.

With regard to the substance used for bleaching, he used either chloride of lime or chloride of soda, taking the precaution to free it from all acid, before it was employed. So far as his experience could decide, it was an operation promising very little. Treated one tooth four or five weeks with but slight change of color.

The Society adjourned till eight o'clock in the evening.

Third Day, 8 o'clock, P. M.

The part of the subject next taken up, was the best means of keeping the cavity dry for filling.

Dr. Rich.—Some years ago, as an experiment, I dried a cavity with a piece of newspaper. It answered the purpose so far as to make the cavity dry, but some particles of the paper was left adhering to the walls of the cavity. Subsequently, I tried different kinds of paper, and found tissue paper, slightly sized, to answer the best for this purpose. I prepare it by rubbing until it is quite soft, and then tear it in strips of an eighth, quarter and half an inch wide, and three or four inches long, so that I have three sizes. Each strip is then twisted into the form of a rope, and it is ready for use. When I wish to dry a cavity, I take a strip of twisted paper and pack it into the cavity until there is enough in to absorb all moisture, leaving the end projecting. To remove the paper, twist the projecting end hard, and the paper will come out easily, leaving the cavity dry. I never was able to make a cavity perfectly dry with cotton, but I can with paper. A simple experiment will illustrate the superiority of paper prepared as I have directed, over cotton, for absorbing moisture: place two drops of water upon a piece of glass, and attempt to take one up with a lock of cotton; you will find it difficult to do so. Touch the other drop with a piece of prepared paper, or you may use a piece of newspaper, it will absorb all the water, and if the paper be pressed upon the glass, it will leave the glass perfectly dry.

I often use paper with great advantage, when I wish to fill

cavities that may be near or partly under the gum. In such cases, the paper is twisted so as to form a small cord and wound around the neck of the tooth, it is then pressed up under the edge of the gum, and the ends secured with a piece of thread, this will prevent any saliva from entering the cavity.

Where there is an extraordinary flow of saliva, I use paper to absorb it, particularly when it is necessary the mouth should remain open a long time. For this purpose, I use thick blotting or filtering paper, it is made up into rolls about the thickness of a finger, say from two to three inches in circumference, and from three to four inches long, according to the size of the mouth. Have ready a number of these rolls and when you wish to use them, direct the patient to raise the point of the tongue to the roof of the mouth, bind the roll of paper so that it will lay inside of the arch of the teeth, and when you have placed it there, the tongue must be gently pressed down upon it to keep it in place. The paper will absorb a large quantity of saliva. When the roll becomes saturated, it can be changed with great facility. If it becomes necessary to stop the flow of saliva from the salivary ducts, the thick blotting paper may be used for that purpose, by folding three or four thicknesses of it together, and placing it between the cheek and gum, so that it will cover and press upon the mouth of the duct. The surrounding parts must be made perfectly dry and the paper applied quickly; if this be not done dexterously, so that the paper and membrane are dry where they come in contact, they will adhere so closely, that you will have to wet the paper before it can be removed with safety. If you attempt to remove the paper while it remains dry, a portion of the mucous membrane will adhere to it.

I have been thus particular in describing the manner in which I use paper, as I believe it will be new and interesting to many. When I was experimenting with it, which is some years since, I mentioned the result of my experiments to Drs. Cleveland, C. A. Harris, Solyman Brown, E. Maynard, E. Noyes, L. Roper, E. Townsend, A. Westcott, W. H. Dwinelle, E. J. Dunning, C. C. Allen, J. H. Foster, and others, and it was a new idea to them at that time.

Dr. Foster said, that Dr. Rich had entered so carefully into the subject, and his method of drying cavities and preventing the flow of saliva being very similar, he had but a few remarks to make upon this question. For drying the cavities, he used the finest old linen handkerchief, well worn, that could be had; these, his lady patients, many of them, seeing the use to which they were applied, were in the habit of furnishing him with abundantly, for which he was much indebted. He used linen, doubled, for absorbing the saliva in filling the under teeth, placing one of these in the requisite position, and retaining it there by means of an instrument made for that purpose, the handle of which the patient holds with the left hand. Sometimes he has found it necessary to change these doilies three or four time in filling one cavity to prevent the flow of saliva into it. It is important that these doilies should be pure linen, and he always depended on the judgment of the ladies, and not his own, in procuring them. In filling the upper teeth, no other precaution is necessary to keep the cavity dry, than to hold a small fold of one end of a doily with the fingers of the left hand against the inside of the tooth, and with the other end occasionally to wipe away the saliva as it oozes out from under the upper lip around the alveolar ridge in front.

Dr. Cleveland inquired what method he took to relieve the moisture in the event of its getting in before he completed the filling?

Dr. Foster said, he took out the gold and tried again, except in a very few cases he could succeed in keeping the cavity dry.

Dr. Harris said he could show a tooth filled without drying, which, at the time, he had no expectation of preserving more than a year or two, in consequence of the frail texture of the organ. It is now as perfect as when first filled. He felt the importance of keeping the cavity dry, but had met with cases where he could not do it. In such cases, he expected by pressure to force every particle of moisture from the cavity.

Drs. Westcott and Rich thought it could not be done.

Dr. Cleveland was in the habit of using unsized fine cot-

ton cambric for preventing the moisture from getting into the cavity. He tore it in strips about an eighth of an inch wide, or more, as occasion required, and a quarter of a yard in length. It enabled him to absorb the moisture quicker than any thing else.

Dr. Harris.—I always aim to keep the cavity dry, but sometimes, I must confess, I cannot. I have sometimes removed the plug half a dozen times, until I have been compelled to introduce the gold when the cavity was wet. I have a filling in one of my teeth, introduced by a student of mine, in which he failed to keep the cavity dry, and I venture to say it will be as perfect at the end of ten years as now. With regard to the best form to give to gold previously to introducing it in the cavity, the method I pursue is to make a narrow fold or roll, from a piece of foil, varying in width from a quarter of an inch to an inch.

The chairman said that he sometimes made a ball as hard as he could possibly roll it.

Dr. Cleveland had quite a different method of preparing the foil. He took a sheet of foil, and cut a strip entirely around, till the whole sheet was cut up. For an ordinary cavity, he took a strip half a yard in length. He placed this upon a velvet cushion, and with a blunt condenser broke up the smoothness of the strip of gold. He then formed it into a perfect string, having something the appearance of a gold chain. The advantage of this was, that the parts interlock so as to form a perfect ball. The doctor here exhibited a string of gold thus prepared, and showed his method of preparing it, much to the gratification of the Society. He said it was first suggested to him by his brother Thomas. With regard to checking the flow of saliva, he had never used any of the articles mentioned. He was in the habit of using his finger and thumb for that purpose.

Dr. Westcott gave his views at length upon the subject of keeping cavities dry, describing the means employed, and demonstrating the necessity of the greatest pains to exclude all moisture during the operation of plugging.

[Dr. Westcott having since this meeting, made some improvements in the means of freeing the mouth from saliva during

the process of filling, has decided to embody his remarks upon that occasion in a separate article upon this subject; they are therefore omitted here.]

Dr. Rich desired the opinion of the members, whether it was not considered important to have the surface of the filling continuous with that of the tooth? The general opinion was that it was better to have it so, in order to have a perfect joint; also to have a depression in the center of the filling.

Dr. Rich said he had adopted a plan to prevent the flow of moisture from the palate, which was to make the patient draw in his breath through the mouth, and expel it through the nostrils.

Dr. Morton, of Boston, here described an apparatus which he had invented to obviate the flow of saliva. The apparatus cannot be described in words, without a drawing. It is sufficient to say that it resembles a miniature fife, and is attached to the under jaw, to collect the saliva.

Dr. Dwinelle.—I have considered this subject of such importance, that whenever I have failed in keeping a cavity dry, I have kept mighty dark. Submarine operations may do for ships, but not for dentistry. In order to obviate the flow of saliva, I have resorted to curious contrivances. One of them is this: in filling an inferior molar on its grinding surface, I have taken a fine slab, wet it on either side, and dipped it in white wax, thereby making sheets of wax. You can have them as thin or as thick as you please. I wipe my tooth dry with Dr. Rich's paper, after which I build a coffer dam around the tooth to be filled, and proceed. Sometimes, when the flow of saliva is very abundant, I take a small syringe, wind a piece of copper wire around the middle of it, so as to leave a ring in which to insert my finger, and with my thumb in the ring of the piston, I pump out the mouth with my left hand. In this manner I have filled an ordinary tumbler with saliva, during a single operation. I agree with Dr. Westcott, that moisture will prevent the gold from cohering. When there is a probability of the gold having absorbed moisture, I anneal it anew. You will sometimes find the first leaves of foil work admirably, but after

you get to the back part of the book it is a different article. I take these leaves and hold them over the blaze of a spirit lamp, (not of pure alcohol, for that gives too hot a flame,) and it is astonishing how the surfaces of the gold will adhere. Care should be taken to keep gold foil dry, by keeping it in a drawer by itself, with a weight upon it covering the whole surface of the book.

The evening being far spent, the Society proceeded to transact the little remaining business, and adjourn till the next year. The members had conducted the three days discussion in an excellent spirit, and were all highly gratified with the mutual interchange of each other's views and methods of practice.

ARTICLE XI.

Report of the Committee of the American Society of Dental Surgeons, on the Propriety of Rescinding the Amalgam Pledge.

Mr. President:—The committee to whom the Society, at its last adjourned meeting, held in Baltimore, referred the paper read before them, on the propriety of rescinding the amalgam pledge, respectfully report: That they have given to the matters involved, the earnest attention which their importance demands, and beg leave to submit the result of their deliberations to the judgment and disposal of the Society. Your committee having agreed to recommend the rescission of the resolution or resolutions, under which subscription to the protest and pledge is made a condition of membership, respectfully offer a concise view of the considerations which have led them to this conclusion.

The organization of the American Society of Dental Surgeons was grounded, doubtless, upon all those views of sound policy, and urged by all those impulses of professional fraternity, which induce similar co-operative unions in other liberal branches of art and science.

The associative sentiment which prompts to the combined order as the method of great enterprises, springs from one of the noblest instincts of our nature; and its necessity is felt, and its advantages are illustrated, in proportion to the rank and value of the undertaking in which it is enlisted. But, in addition to all this, the special exigencies of the day, temporary in their own nature, but of critical importance to our profession, in the forming stage of its history—were felt to be the immediately pressing occasion for a national organization. All the necessities of fraternization were acknowledged, and all its general usefulness was appreciated, but the main interest of the emergency was the creation of a conventional tribunal, with its incident authority, to assume the responsibilities of the profession, and to establish and vindicate its corporate character. The formation of this Society was the earliest general attempt to run a clear line of discrimination between the man of competent attainments and the impudent empiric; not by arrogating to its own membership the exclusive claim of regular professional standing, but by erecting a general and authoritative standard, by which the claims of our department of surgical art might be formally asserted, and respectable qualifications be better distinguished from unwarranted pretension. Such motive was justifiable as a matter of individual self-respect and self-defence; but it also deserved the credit of a generous regard for the honor of the whole body of worthy practitioners. In the preamble to the constitution, this object is expressed in the form of a summary of the inducements to the organization; after enumerating important general aims, the article concludes thus: "In fine, to give character and respectability to the profession, by establishing a line of distinction between the truly meritorious and skilful, and such as riot in the ill gotten fruit of unblushing impudence and empiricism."

For all the reasons that men of honor and probity, bearing a common professional appellation, should associate in order to establish a standard and a reputation for their profession, and at the same time apply the corrective of authoritative opinion to abuses over which they had no other power, the den-

tists of the United States, eleven years ago, organized the American Society ; and among the mischiefs calling for remedy, at their hands, a very conspicuous one was the business of amalgam or mineral paste fillings. Under seven different names, at least, but with no real change in the essentially mischievous ingredients, the mineral paste was used by all sorts of pretenders and impostors as a cheap, agreeable and safe substitute for the nobler metals in the filling of teeth and their fangs.

In the free and easy morality of the Greek mythology, Mercury was assigned the post of patron deity of thieves ; it was a capital hit—a regular piece of oracular inspiration, that gave his name to the metal whose facility of use in all sorts of quackery, well entitles it to the honor of his slippery godship's cognomen, as the great facility of motion to which it is usually ascribed. General therapeutics had for centuries afforded large play ground for this mountebank miracle-worker ; and dentistry, by a sort of inheritance, was destined to sustain an assault in its turn, but thanks to the giant energy of the youngest born of the healing arts, even in its cradle, it was able to strangle the snake, and break the wand of the enchanter.

Before the formation of the Society, the Crawcour, and soon after the Malan, imposture had their run, and such was the odious notoriety of their practice, that the question of amalgam filling was as familiar, at least, if not as clearly understood, in the mind of the community at large, as in that of the profession ; and such generally were the circumstances and the excitement of the occasion, that respectable men felt the necessity of distinguishing, in the most explicit way, the practice of the regular profession, from all possibility of identification with such atrocious empiricism. An abuse of the public trust, and a violation of the principles of our art so gross as *these* charlatans had practiced, of course, men of *reputation* had no necessity for themselves to disavow. But there were other possibilities of mischief in this matter, not so *obvious*, nor so amenable to public reprehension, which fell properly within the care and correction of the faculty itself, and to which the Society felt bound under the circum-

stances to apply a remedy. There was something in this sin against science so easily besetting to incautious, inexperienced and imperfectly qualified practitioners, that they were but too likely to stretch the probabilities in its favor, and to practice it to the detriment of all good dentistry, and the general discredit of the professional name. Moreover, the great body of dentists then fully agreed in the opinion that any and every use of the mineral pastes was mal-practice, and reprehensible on the triple ground of fraud upon the patient's purse, danger to his health, and injury to the interests and advancement of the profession.

The Society, therefore, under the impulse of self-preservation, and in obedience, also, to a public duty, repudiated and denounced the practice, and proceeding, as it believed the case required, from a declaration of opinion, which met with no formally displayed opposition to its enforcement, at last, in 1845, exacted the protest and pledge from all within its jurisdiction. The stringent measure of compelling conformity of practice by the penalty of expulsion in a matter of science, which, though almost universally assented to, still lay in the naturally free domain of opinion, and was not a subject of explicit constitutional or conventional compact, is open, certainly, to general exceptions, and must bear the onus of defending itself against the prima facia violation of permanent, uniform and universal principles. The argument for liberty of opinion and correspondent liberty of action, is obvious aud conclusive, even to demonstration, it is equal to intuition in clearness and authority ; and the exceptional abridgement or suspension of the right must be able to plead such exigencies as in all affairs of life are allowed temporarily to over-ride the settled constitution of things ; even as martial law, military conscription, police levies, and the irresistible concomitants of flood, fire and pestilence, in their several ways, take authority from their sheer necessity.

Our profession, at the date of these events, was young ; it was very imperfectly organised ; it had, as yet, made no such lodgement in public confidence, as might shelter it from plausible charges of empiricism ; it was crippled by its own incapacities, as well as burdened with the weight of injurious miscon-

struction, and only too large a proportion of those who bore the name, were raw and ignorant adventurers, or worse, reckless fugitives from other professions and avocations, for whose duties they were, on trial, found to be incompetent: indeed, even a large number of the tolerably honest and tolerably successful knew but too little of the science, and felt too little of its enthusiasm and of its responsibilities, to form a safe judgment in the premises, or to follow a sound practice against strong temptation, if they even obtained some glimpses of the truth. To all this, add the seductive facilities of the operation; the falsely flattering exemption from the disagreeable of operating and enduring to both dentist and patient; the cheapness of material, and above all, its plastic property, doing its own drilling, fitting and hardening, and there is enough to explain and to warrant the most *determined* and decisive action on the part of those who had married the profession for better for worse, and must stand or fall with its fame and fortunes.

Moreover, the curative treatment of diseased teeth, being at once the most difficult and the most important branch of dental surgery, was then, as it is yet, and must ever be, the one in which the highest art has most to achieve, and in which it is most exposed to the indirect practices of ignorance, indolence and dishonesty, within and without the regular ranks. Here, just here, the Society felt, in all its instincts, was the post of danger, as it was the post of honor; and it may well be excused to a generous *esprit du corps*, and an honorable sense of public duty, if, either in form, manner, spirit or effect, it transcended, in some slight degree, those nice limits between expediency and error, which are not only difficult to determine, but, in fact, shift their position with circumstances, and even with the opinions and caprices of the parties engaged in them. In every branch of science and art, in every department of practical affairs, there are representative men—men who, without usurpation, without any formal design, almost without even the consciousness of the fact, virtually legislate for their class. They are rulers and patterns by the highest right, the divine right of fitness. In emergencies these men are sure to take the direc-

tion and the responsibility of affairs. They lead revolutions as provisional governments and committees of public safety, and they rule by the inspiration of the occasion. Precedents, which are often mistaken for principles, do not serve the turn; the general welfare demands the protection of a higher rule, better adjusted to the hour and the exigency. The criterion by which such actions are to be judged, is the issue and the end which is attained. If the affair is conducted in all respects to a happy result, securing permanent good, with no abatement of enduring evil, it stands justified, and the agents are vindicated. It is not questioned, and it need not be denied, that after any successful struggle, with *all* the facts in full view, a critic may be able to say where a little ammunition might have been saved, and where a little blood might have been spared, without endangering the result. Nay, an objector, who takes no other responsibility of an enterprise than that of finding fault, may be able to demonstrate, after the battle, just as he asserted before it, what nice points of principle, and close calculations of propriety, were violated in the heat and hurry of the engagement. All these things are truly matters of regret, and may well check the exultations, although they cannot destroy the value of the victory. But *after* the battle, the only question remaining really worthy of general concern is, how the peace may be adjusted, and its great interests be best secured. The combatants must not indulge their spite by trampling on the dead and killing the *cripples*, after the conflict is fairly over; in other words, a high debate, made necessary on both sides by sentiments of honor and duty, must be protected from descending into the gossip of a personal wrangle, after the unhappy question of difference itself is settled. As a first step to a consummation so desirable, we propose the repeal of the resolutions which enforce the amalgam pledge, in the persuasion that it has fulfilled its office, and served its turn, and may therefore be honorably discharged from the service. It is now seven years since the Society, "unanimously resolved, that it regards the use of mineral pastes as stoppings for carious teeth as malpractice." In 1841 with like unanimity, it had declared that amalgams were

hurtful to the teeth and every part of the mouth, and that gold could be used in every case where any form of filling fairly promised advantage, and at subsequent annual meetings it reiterated these sentiments, till finally in 1845 it resolved upon the expulsion of non-conformists, and in 1847 actually inflicted the penalty upon some of its members.

Testimony so uniform, continuing and unwavering, and action so rigidly conformable, and maintained at such expense of professional and personal attachments, as the censure and expulsion of many highly prized friends and brethren, is, we believe, enough for the end aimed at, enough for all the requirements of duty in the premises, and because enough, quite as much as we can constrain ourselves to do and endure in relation to it. Seven years bring great changes in the things around us, in ourselves, and in all our relations and attitudes to the world's movements. The condition of things which at the beginning of that period controlled our conduct, are all changed, and with them, the forms of duty and expediency which the most rigid principles must take from varying circumstances.

A young and rapidly rising profession like ours is almost transformed, as the human body is popularly supposed to be in the course of a septennial cycle. It maintains its identity indeed, as the infant still lives in the man, but its position to passing interests, its strifes and dangers, and its duties in relation to them are no longer the same, because it has become wholly a matter of individual responsibility.

The reputation of the profession has been steadily growing during the interval through which this strife prevailed, and has fairly settled into such established consistency as serves, now, quietly to avert impeachment of empiricism, that ten years ago would have involved the fraternity in the judgment of but too many of the community for our interests and honor, however unjust and contemptible for palpable untruth and absurdity.

Dentistry now, like the practice of medicine, may safely trust its general character to the common caution and prudence which legitimate responsibility ordinarily requires. No doubt many causes have operated together to produce the present con-

fidence in the integrity of our profession, felt by the public; but it is very safe to infer, that the nice sense of professional honor, and the jealous strictness of discipline which the national society has so long manifested in its own unfearing and unflinching way, did much to impress upon the public mind our own estimation of our duties and dignity, and served, at the the same time, to re-impress and deepen the sentiment upon ourselves and the entire profession, as well those without as those within the Society lines. If it be true that even the collision of opposite errors often elicits truth, then the earnest conflict of a high-hearted sentiment, pursuing right ends by direct means, against a wrong which rested its defence wholly in exemption from conventional control, must have contributed eminently to the fortunate issue which has resulted. For, whether the Society was right, as it honestly believed, in all its ends and means, or unfortunate in some circumstances of its method, it cannot be doubted, we think, that the exhibition and vindication of a corporate spirit, a professional conscience, a jealous regard for the public welfare, and a scrupulous subjection of its own membership to limitations and restraints, up to the point where honor and duty meet and may not pass each other, must have contributed nobly, in every way, to that enhanced regard which the community has learned to accord to the profession of dental surgery. Moreover, the profession itself has been advancing all the while, in improved views and methods of treating diseased teeth, and in juster apprehensions of the paramount importance of this branch of practice; and as it would be unphilosophical to exclude any cause actually in operation from a share in the effect, the pledge and protest may vindicate their claim to a portion, probably a large portion, of that excellent result which has accrued in the matter upon which their action was directed; and in the same ratio that the faculty has itself advanced, the public has learned to distinguish mere pretension from real ability. It is ever so. The men of any calling, which rests in reputation, need but to be true to themselves and to principle, during their term of probation, and they will mould the mind of the public to the impress of their

own. But, however arrived at, and by whatever means achieved, your committee believe that the time and the conditions have come, when this Society is no longer responsible to itself, nor held so to the community, for any of the mischiefs of amalgam filling in the practice of its members or others. And having no other rightful authority in the premises, than that which arises out of necessary self-defence, and the duty to the public which is involved in its societary function; the obligation of official action ceases with the necessity, and the expediency of a crisis which has passed, gives way to the regularity of the general rule.

The Society certainly never meant, by the exaction of this pledge, to abridge the natural liberties of opinion, or to settle upon principle any question of science by force of a majority, or even by an unanimous vote; *but* to protect itself against injuries, to forward the objects of its organization, and to promote the corporate welfare.

While, therefore, we would intimate no change of sentiment as to the subject matter of the protest, believing, as we do, the substitution of amalgam for gold to be malpractice, but would still most earnestly *advise that* total abstinence from the practice, which we have heretofore *enforced.* We recommend the repeal of all the resolutions in regard to amalgams, [enforced by penalties,] and submit the following resolution for adoption:

Resolved, That the several resolutions adopted by the American Society of Dental Surgeons, at their annual meetings held in 1845 and 1846, having the effect of enforcing subscription to the protest and pledge against the use of amalgams and mineral paste fillings for teeth, be and the same are hereby rescinded and repealed.

All of which is most respectfully submitted.

ELISHA TOWNSEND,
JOSEPH H. FOSTER, } *Committee.*

SELECTED ARTICLES.

ARTICLE XII.

Hawes' Moulding Flask

At the last annual meeting of the Society of Dental Surgeons of the State of New York, Mr. George E. Hawes, of this city, exhibited, in connection with his experiments on metallic casts, a new flask for moulding models, which, owing to the depression of the jaw above the most prominent portion of the gums, cannot be removed perpendicularly from the simple flask, in common use, without dragging more or less sand with it. This "drag" prevents the dentist from procuring a perfect casting, which is ensured in all cases by the use of Mr. Hawes' new flask.

The following cuts will illustrate the operation of this flask with very little description:

Fig. 1.

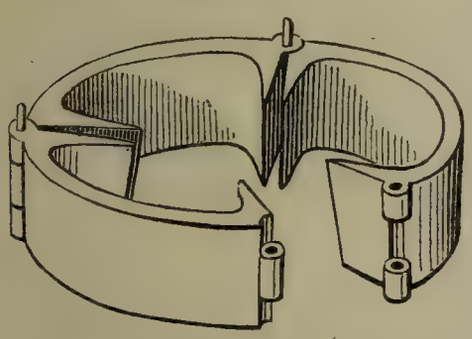


Fig. 2.

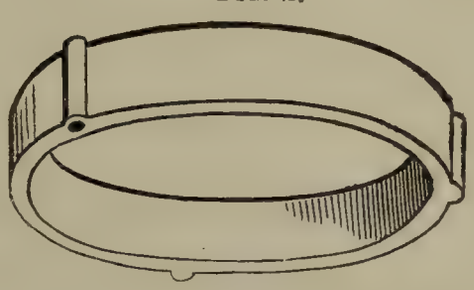
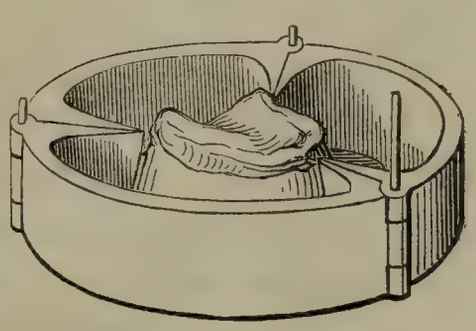


Fig. 1 represents the lower section of the flask, slightly opened, to show the joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a pin, and the plaster model placed in it, as represented in Fig. 3.

Fig. 3.



If the model be considerably smaller than the space between the flanges, projecting in towards it, small slips of paper may

be placed in the joint extending to the sides of the model, to part the sand when opening the flask for the removal of the pattern. The sand may now be tamped around the pattern up to the most prominent part of the gum, and it should be finished smoothly around it, slightly descending towards the model, so as to form a thick edge of sand for the more perfect parting of the flask. The sand and face of the model must now be covered with dry pulverized charcoal, sifted evenly over the whole surface. The moulders keep it in a bag which they shake over the flask.

When this is done, the upper section of the flask is placed upon the lower, and carefully filled with sand. It is then raised from the lower one, which may then be parted, by removing the long pin, and the model gently taken away. When closed, and the two put together again and inverted, it is ready to receive the melted metal.

We have used this flask, for which we are indebted to Mr. Hawes, for some months; and have been able to make, by its use, more perfect castings than ever before, in the kind of cases for which it was designed.

We understand that Mr. Chevalier will soon have an assortment of them for sale.—*N. Y. Dent. Rec.*

ARTICLE XIII.

Regulating Teeth by Spiral Springs.

Messrs. Jones, White & Co.

Gentlemen:—Accompanying is an arrangement, with bands and spiral springs, for enlarging the superior maxillary when it is contracted by premature extraction of the deciduous teeth, or any other cause, which I have used with success, in many difficult cases, for many years, as well for expanding the arch as the regulation of teeth. You will perceive that it is calculated to keep up an equal and perpetual pressure on as many teeth as is desirable.

The accompanying model presents an interesting case, and illustrates what are, too often, two inexcusable errors of the

past and present generations, and of daily occurrence. 1st. That of extracting the deciduous canine teeth, to give the lateral incisors room, as it is termed, and which, as their unabsorbed fangs leave a deep wound in healing, draws the lateral incisors and first deciduous molars together, contracts the alveolar arch, and allowing the laterals to fall backwards and inwards, dragging the lateral edges of the front incisors along with them, and sometimes before they are long enough to grasp the inferior teeth, in advance, they are much behind them; and 2dly. To mend the matter, when the permanent canine teeth make their appearance, apparently too far outside of the arch, (it is true but a deformed arch,) and only room for half a tooth between the laterals and bicuspids, and in some instances none at all, either they or the first molars, the most valuable teeth in the head, or the bicuspids are doomed to extraction, to make still *more room*, instead of endeavoring to remedy by art what ignorance has done, enlarge the arch and bring out the six or eight stray teeth to the canines, which are in most cases in their proper places. The manner of making it is exceedingly simple: make a plaster model of the mouth in the usual way; then fit a light band around each tooth, joining each other at feather edges between the teeth, instead of filing between, that requires to be thrown outwards. Say, for instance, it is the superior bicuspids of either side, solder those bands together on the palatine sides of the teeth, then solder a short piece of round wire on the same sides of the bands, near their middle, and thick enough to allow of slipping on a spiral spring long enough to extend from one side of the arch to the other, and to lie close along the posterior parts of the front teeth; now if those bands are nicely fitted around the teeth, the apparatus can be worn with comparative comfort; the patient can go to school, (as it is generally in "school days" that the operation is required,) or even into society, without exposing so much gold as those horrible

"bars" that go all around the front part of the teeth and gums. Another method of applying the spiral spring, and which is original with myself, though I do not name it to claim any credit, is as follows:

It often happens that the two lateral incisors are grasped posterior to the inferior teeth, and the front incisors are in their proper positions. By lashing down the extremities of a piece of spiral spring to the necks of the lateral incisors, and the spring extending across the two front incisors, you will perceive that they become a fulcrum for the spring to throw the laterals over the lower teeth. As the spring straightens, the laterals will be brought on a line with the central incisors. It is generally true, that, as the front teeth are harder to force backwards, on account of the alveolar process being thicker on that part than the external alveolar plate, and the teeth being large too, that they afford a sufficient fulcrumage. But if they be not, place a plate in the roof of the mouth, and fasten it to the back teeth, as if it were to set teeth, letting small pieces of plate project forward and downward against the posterior parts of the front teeth, which will prevent the possibility of their being pressed backwards.

But if it be like several cases that I am treating now, where the front teeth are too far out, by the time the laterals are well forward, the fronts will be depressed sufficiently. Or when the median edges of the front teeth present the appearance of bulging out, the spring pressing upon them will level them down properly. If the laterals be too long to sweep over the lower teeth, solder to the plate, if there be one in the mouth, an inclined plane to keep the jaws apart far enough for that purpose. When the plate is not in, lash an inclined plane to one or more of the teeth. Never put a cap over a tooth to receive the direct or full stroke of the jaws in masticating. I have seen cases where the enamel has been literally mashed by that means. As many injuries have been sustained in various ways, in the treatment of irregularity of the teeth, many persons needing attention will not venture to submit to the operation. All cases require close watching, that too much pressure is not

produced, so as not to establish periosteal inflammation in teeth that are not fully developed.

I also use the spiral spring for turning teeth that stand across the alveolar ridge. There are a great variety of ways of applying those springs, so as to make a very neat and comfortable apparatus for enlarging or contracting either of the maxillaries, or for operating upon a single tooth.

If the foregoing is worthy a place in your valuable journal, please insert, and oblige

Your humble servant,

Dental News Letter.] J. D. WHITE.

ARTICLE XIV.

Disease of the Antrum.

The diagnosis between enlargement of the antrum by a morbid growth within its cavity, and the gradual expansion of the walls of that sinus by fluid, requires, according to the records of surgery, a great deal of care. The cases where the distinction presented some difficulty are doubtless of considerable value; we therefore think we are rendering good service to our readers by giving them the outline of a very interesting case of that description lately under the care of Mr. Fergusson, of King's College Hospital.

History.—Marianne S., twenty-six years of age, was admitted into the Adelaide ward, March 23, 1850; was born in Hampshire, and has always lived in the country. Her health has never been strong; she has always been looked upon as delicate, and is subject to severe headaches. Patient has been married eight years, and the youngest of her four children is five months old.

About eight months ago, a swelling appeared on the right cheek, in the situation of the antrum, about three-quarters of an inch external to the right ala nasi, and on a level with that process. It came on imperceptibly, without any pain, and when she first noticed the tumor it was about the size of a pea, immovable, and not painful on pressure. Since that time it has gradually increased, but of late somewhat rapidly.

On admission, the tumor was about the size of a hen's egg, involving the whole of the non-alveolar portion of superior maxilla on the right side. Externally, it formed a large, smooth, undiscolored projection, drawing the eye a little downwards. On passing the finger inside the cheek and along the outside of the teeth, the quantity of gum between the latter and the projection of the swelling was felt to be very small. On looking into the mouth, the right half of the hard palate presented, instead of the normal concavity, a smooth convexity, rather more than an inch long, and half that width, this convexity lying between the median line and the gum of the molars and bicuspids of that side. On pressure, which gives the patient no pain, there is a feeling of some fluctuation, and the hand experiences an elastic tense sensation. When strong pressure is made on the cheek, the patient feels the teeth thrust downwards.

The first and third molar, and the first bicuspid, are destroyed by caries, and the other teeth are likewise affected; in fact, the patient has always suffered from tooth-ache, and she has hardly a sound tooth in her head.* The zygomatici muscles have been so stretched, that they have become paralyzed, and on smiling, the right corner of the mouth, instead of being drawn upwards, is pulled downwards and outwards, the triangularis oris muscle alone acting. The most yielding part of the tumor is the situation where it first appeared. Five days after admission, the patient was attacked with severe inflammations on the *left* side of the face, involving the glands and gums. She was some time before she recovered from this complication, the disease of the antrum remained, however, in the same state as before described.

Mr. Fergusson, considering that the time had now arrived to adopt operative measures for this affection, had the patient brought into the theatre on the 27th of April, and determined to proceed to the removal of the superior maxilla, if the cavity of the antrum, where really, as was suspected, found occupied by a solid tumor. Bearing, however, in mind that the appear-

* Bordenave says, as quoted by Mr. Stanley, "Caries of the teeth is the cause of almost all the diseases of the antrum and neighboring parts."

ances presented *might* be owing to an accumulation of fluid, the operator resolved to make an exploring puncture through the gum, before any further steps were adopted. An exploring needle was therefore passed into the tumor, and when fluid had been seen to escape, Mr. Fergusson took up the scalpel, and made an incision through the gum (the patient having been rendered insensible by chloroform) down to the anterior wall of the antrum, and took out a portion of the same, which was much thinned. By this proceeding, a quantity of glairy fluid containing flakes of cholesterine, was let out of the antrum, and the nature of the tumor being thus ascertained, no further interference was required, and the patient removed. The swelling went on diminishing in size for the next few weeks, and the patient was discharged on the 3rd of May, in a pretty satisfactory condition. Mr. Fergusson performed an operation of a somewhat similar character as the above, on the 22nd of June last. Here the patient was a man fifty years of age, who stated, that about seven years ago he was much troubled with the tooth-ache on the right side of the superior maxilla, and he noticed that that bone was increasing in size. This went on until about four years ago, when the tumor was lanced through the gum, and about half an ounce of thick, reddish fluid like blood escaped. Though the swelling decreased a little, the improvement did not last long, and the tumor again increased, and discharged pus from the alveolus. On admission, the patient presented a hard, osseous tumor, projecting from the superior maxilla, about the size of a pigeon's egg. In the mouth, a hard but yielding portion was felt to extend along the outer side of the alveolar process; and was obviously hollow. The patient had never experienced any pain in the tumor. The operator made a longitudinal incision into the right nostril, and reflecting the flap upwards and outwards, removed the anterior wall of the antrum with the curved bone forceps.

After the operation, Mr. Fergusson stated that the pupils would doubtless take unusual interest in the case, in consequence of what he had said at his last clinical lecture; as also from the circumstance that an instance of a somewhat similar

kind had so recently been under notice in the hospital. The case just operated upon was in many respects similar to that of the female who had left the house a few weeks ago. There was one important difference—viz. that it was of older date. The swelling here had been present about eight years, and had varied in size at different times. One thing was particularly worthy of notice; that considerable deformity—in the shape of a large tumor on the cheek—remained. The discharge of the contents of the antrum had not permitted the expanded walls to resume their natural condition; and time alone could show whether such a desirable result would follow what he had done for the female patient. When he had last heard of her she was in excellent health; but it might be doubted if the swelling would ever entirely subside.

The man on whom he had just operated was anxious to have the conspicuous tumor removed; and Mr. Fergusson had therefore cut away the front wall of the antrum, which measure, as would be perceived, had the desired effect. He had, on a former occasion, observed, that such a condition as this, although well known to surgeons, was nevertheless not met with by any means so frequently as solid growths within the antrum, or connected with the jaw-bone.

Here (showing a cast) was an illustration of a remarkable case of this description. This was a cast which he had taken from the head of an old woman, who had an enormous enlargement on the side of the face, which had burst some few days before death. It would be observed what a large horizontal projection there was immediately under the orbit, and how a plate of bone projected forwards from the alveolar ridge, both of which produced great deformity. In this instance, the swelling had been larger than in the two cases which had recently been under treatment. The plates of bone were sufficient to show that the deformity was likely to remain, unless removed by such a proceeding as that which he had just executed.

Mr. Fergusson then concluded his observations by referring to various drawings and casts from cases which he had formerly had under his care, and dwelt particularly upon the various

incisions on the face which surgeons had made in dealing with tumors in this locality, adverting especially to the division of the upper lip in the mesial line—the incision at its upper end running into the nostril on the affected side—a plan of operation which he considered peculiarly his own, and which he thought was attended with less inconvenience during the operation, and followed by less deformity at a subsequent date than any with which he was acquainted.—*London Lancet.*

ARTICLE XV.

Case of Disarticulation of the Left Condyle of the Lower Jaw, with Excision of nearly the Left Half of the Bone, on account of a very Large Cartilaginous Tumor, Growing from, and Occupying the Site of all this Part of the Bone, save the Condyle and Neck. By W. R. Beaumont, Professor of Surgery in the University of Toronto, Canada.

This patient, a child, aged seven, was admitted into the Toronto Hospital, September 17, 1849. The tumor, on his admission, extended upwards to the zygoma and malar bone, almost covering the temporo-maxillary articulation. It reached downwards to fully an inch below the angle of the jaw, extending inwards into the mouth as far as the mesial plane backwards, beyond the ramus of the jaw, and forwards to the posterior bicuspid. It pushed the tongue quite to the right of the mesial plane, concealed the velum, and almost completely filled the isthmus faucium. The molar teeth of the upper jaw were deeply imbedded in the tumor, which kept the mouth at all times open, with a constant dribbling of saliva, the upper and lower incisors not meeting by fully half an inch. The tumor had been first observed three months back. September 25, 1849: Professor Beaumont performed the operation for its removal, commencing by making a curved incision, (the concavity upwards,) extending from the lobule of the ear to the angle of the mouth, dissecting off the integuments from the tumor. The tumor was firmly wedged in under the malar bone. The outer wall of the jaw was cut vertically through with a small straight

saw. The section was then at one stroke completed with a strong bone forceps. The condyle was disarticulated by being firmly grasped in a forceps, the joint being opened by dividing the external lateral ligament and capsule.

The patient did very well. A small stationary fistula was formed in the cheek, which eventually healed. On December 1, 1849, the patient was quite well. The right half of the lower jaw was drawn a very little towards the left side, about one-eighth of an inch. The external cicatrix was a mere line.

[*Medical Gazette.*

ARTICLE XVI.

Mr. Gilbert's Fulcrum.

Sir,—In your last number of the Provincial Medical and Surgical Journal, you reviewed my pamphlet on the *Extraction of Teeth, with an account of a New and much less Painful Mode of Operating*, but for the following reasons could not recommend it to your readers; had you, however, inspected the fulcrum and chair yourself, or sent some competent person, as did the editors of the other medical and surgical journals of repute, before offering to criticise, I am sure you would have given the same favorable verdict. Allow me, therefore, in justice to myself as the inventor, and the profession and public you have unintentionally misled, to refute your objection. You state:

"To any one who understands the commonest laws of mechanics, it will be at once apparent, that in raising a lower tooth, for instance, out of the socket, as proposed, the jaw is forcibly pressed against the under side of the fulcrum, and the amount of injurious pressure is just as great as it would be if the fulcrum were loose in the mouth, as in the old pelican elevator. Indeed we are inclined to think that the injury may be greater, since in Mr. Gilbert's fulcrum, no adaptation can take place to the surface of the teeth, but some one point must receive all the pressure required, whilst the fulcrum afforded by the pelican, adjusts itself so as to take its bearing from all the

available points, and is consequently not so likely to prove injurious, either by damaging the crowns, or producing inflammation of the sockets.

"We are decidely of opinion that in the majority of cases the sound adjacent teeth are exposed to injury from the pressure of *any fulcrum which can be used against a power sufficient to raise the tooth out of the socket*, for it is quite evident that if you lift the tooth, the jaw either goes with it or is prevented doing so by some antagonistic force, and as that force cannot be applied to the soft parts, its application is limited to the teeth themselves, as in both the instrument of Mr. Gilbert and the discarded elevator.

"Should these opinions be practically falsified, no one will rejoice more than ourselves, but after very mature consideration of the subject, we cannot, conscientiously, recommend the apparatus to our readers, although we are fully sensible of the great advantage of the principle, if it could be satisfactorily carried out."

Now, I contend that the principle is carried out by my fulcrum, and that your objection falls to the ground ; for the teeth do not come to any injurious contact with the fulcrum, for the following reasons, which you have entirely overlooked or forgotten :—In extracting a tooth with the forceps with one hand, you place the other on the chin to counteract the antagonistic force, assisted also by the patient's own weight and muscular resistance (if the lower jaw is to be operated upon, as exemplified by you.) No injurious consequences have ever happened. Should the teeth come in contact with the fulcrum, which being covered with some soft material, as gutta percha, no one tooth is particularly pressed upon, as hundreds can testify, on whom I have operated. Many were eminent surgeons, artists, dentists and mechanics, and all are satisfied of the great superiority of my invention. Should you require further evidence, I send the address of a gentleman from whom I extracted a large upper molar, wearing at the same time upper artificial porcelain teeth, which would have broken like glass, had they come in forcible contact with the fulcrum. I know any thing

new has many difficulties to contend with, but I trust my great practical experience—moreover, the fact of eminent dentists sending me some of their most difficult cases of extraction, and the testimony of those who daily use my fulcrum and chair, to the exclusion of the old method, must be a further guarantee of the value of the invention.

When exhibiting and explaining the use of my fulcrum, at the meeting of the South-Eastern Branch of our Provincial Medical and Surgical Association, at Brighton, of which I am a member, not an objection was raised, but by all praised, as as did the members of the Medico-Chirurgical Society, Westminster Medical, Medico-Botanical, &c. &c.

Should you have any further doubt on the subject, against such evidence, and against such high medical and surgical authorities as the *Lancet*, *Medical Times*, &c. &c., do come and have a tooth extracted, when I am sure you will go away and exclaim with Mr. Punch—"Go to the admirable Mr. Gilbert, in Suffolk Place, who is dragged into this essay for the benefit of mankind alone, and who, I vow, removes a grinder with so little pain, that all the world should be made aware of him."

I am, Sir,
Your obedient servant,
H. GILBERT.

5 *Suffolk Place, Pall Mall, East,*
London, September 28, 1849.

[We willingly give insertion to the above letter, although we have no inclination to risk the destruction of a valuable tooth for the sake of proving the truth of opinion. We beg, however, to remind Mr. Gilbert, that it was only on his repeated solicitation that we reviewed his pamphlet, thinking the notice in the report of the South-Eastern Branch quite sufficient for the purpose of bringing his invention before the public. We would also remark, that the editor of a journal is not to be led by the opinions expressed by his contemporaries, but rather to judge for himself, which we have endeavored to do in this instance. With regard to Mr. Gilbert's reasons for dis-

puting the position maintained in our review, we regret extremely, that they have not altered the opinion formerly expressed. If the force of the hand on the chin could be sufficient to antagonise the power exerted by the forceps with the assistance of the leverage afforded by the fulcrum, then the use of the instrument cannot be great in raising the tooth perpendicularly from the socket; for we cannot suppose the left hand stronger than the right. The fulcrum, therefore, we think, if of any use, must be strongly depressed, or rather, the jaw must be elevated with great power, and if so, the danger of injury to the sound teeth proportionably increased; and this we hold to be the most important point to guard against in the whole range of dental surgery.—*Ed. Provincial Medical and Surgical Journal.*]

ARTICLE XVII.

Chemistry and Vegetable Food.

We abridge, from the *Edinburg Review*, the following important observations relative to this scientific subject, regretting that our space will not permit our giving the entire article:

Recent determinations of the proportions of nitrogen in wheat have served to correct erroneous opinions. It was long believed that the wheat of warm climates, as containing more nitrogen, was more nutritive and pecuniarily valuable than the wheat of temperate countries. But late researches show British wheat to be economical and nutritive as compared with the wheat of India, Australia or the Black Sea. The British miller seeks foreign wheat to mix with British grain, for ease in grinding, to produce for the baker a flour that will stand more water. The pastry cook and maccaroni maker need a flour to make peculiarly adhesive dough. These were supposed to be qualities inherent only to wheat abounding in gluten. Modern chemistry corrects the mistake. So in regard to muscle-forming matter which was supposed to exist more in wheat than in oats. But

experience has shown that oats such as are grown in Scotland form most nutritious food. English habits, and the celebrated Dr. Johnson's ridicule, had nearly shamed the Scotch out of their national diet; but chemistry steps in to vindicate it, and shows that oats and oatmeal excel, as muscle-forming matter, the best wheat and the finest wheaten flour. Chemistry has further shown the value of the parts heretofore treated as waste. The husk or bran is proved by analysis to be richer in muscular matter than the white interior of the grain, which explains the cause of its answering so well as food for cattle. The true value of other food is also established by these inquiries. Cabbage has hitherto not been a general favorite in this country, either in the stall or for the table. In North Germany and Scandinavia it has long been esteemed. The result of recent examination, suggested by the failure of potatoes, is both interesting and unexpected. When dried so as to become fairly compared with wheat, oats, beans, &c., it is found richer in muscular matter than any other crop we grow. Wheat contains but 12 per cent., beans 25; but cabbage gives 40 per cent. of the so-called protein compounds. It is therefore pre-eminently nourishing. Hence, if it can be but made agreeable to the palate and easy of digestion, it is likely to prove the best substitute for the potato. Irish kolcannon, (cabbage and potatoes beaten together,) derives its fame from the more muscular sustaining power of the cabbage, in which the potato is deficient. An acre of ordinary land will produce a greater weight of this special kind of nourishment than in any other crop. But cabbage is so exhausting to many soils that wheat will scarcely produce an abundant crop after it. Such wheat springs up, but yields little straw, and quickly runs to a puny ear, containing little grain. But the chemical analysis points out the means of repairing this exhaustion at the least cost. In many parts of England furze or gorse grows an unheeded weed, and luxuriates in vain. In other districts large breadths of it are grown for feeding stock, and yield profitable returns. Chemical research proves its nutritive value. Of muscle-forming materials it contains, when dry, 30 per cent., and is inferior herein only

to the cabbage. No doubt can, therefore, be entertained that the more extensive cultivation of gorse on poor soils would be most advantageous.

The Tussac grass, a native of the Falkland Islands, is most fattening for stock, especially for horses. Some seeds thereof have been lately imported, and the products of its vegetation in this country have been analysed. The proportion of muscle-forming ingredients in the dried grass is as great as in the best samples of wheat, oats or barley. Thus its feeding qualities are confirmed, and we may look to see it domesticated in Great Britain. The money value of the above investigations need not be dilated upon, but the results indicate questions of a higher kind, which will readily occur to the reader.

ARTICLE XVIII.

Partial Deafness of Twenty Years Standing, Caused by the Presence of a Tooth Impacted in the Ear.

The patient in this case, a shepherd, thirty-two years of age, applied to Dr. Niesmann for his aid in reference to deafness, from which he had suffered from childhood. He had been under Dr. Neismann's care two years previously, when suffering from an attack of typhus, at which time the doctor regarded the deafness as the result of cerebral disturbance, and which he considered he would lose with returning health.

On examining the organ with a sound, it struck against a hard bony substance; and on questioning the patient, he replied, "Yes, there is a tooth there." Dr. Neismann expressed his surprise at the answer, which was reiterated; and on further inquiry he learned that, when a boy at school, a schoolfellow having removed a loose tooth for him, he jestingly inserted it into the external meatus, and it passed in beyond his reach. His hearing thereafter became impaired, and he was often quite deaf. Repeated but unavailing efforts had at various times been made for its extraction; he had suffered much pain, and lost much blood in these attempts, and had, in consequence

of his deafness, been obliged to abandon his calling as a soldier, and had become a shepherd. Dr. Neismann introduced a pair of fine long forceps into the ear, and by a rotatory mot on extracted the tooth from the cavity of the tympanum. As if by an electric shock, the patient's previously dull and inexpressive countenance brightened up with joy, and he exclaimed, "Now I can hear." The tooth weighed five grains, and was coated with hard cerumen.—*Casper's Wochenschrift.*

ARTICLE XIX.

New Mode of Reducing a Dislocation of the Lower Jaw.

It is generally believed that in luxations of the lower jaw, the condyle lies in front of the transverse root of the zygoma, and is there held down either by muscular contraction, or by the resistance of the zygoma. This theory of J. L. Petit, Boyer, Sir A. Cooper, &c., has lately found an opponent in the person of M. Malgaigne; and M. Nélaton has recently brought forward some facts which confirms M. Malgaigne's opinion. According to these surgeons, the persistence of the displacement is caused by the contact existing between the coronoid process and the os malæ. Thus, it is sufficient, in order to reduce, to place the two thumbs on the coronoid processes after the patient has opened his mouth, and without taking hold of the jaw, or taking any fulcrum, to press them backwards, in order to make the condyles glide into their place. Another mode of proceeding, is to place one's self behind the patient, to take a fulcrum on the nape of the neck with the two thumbs, and place the fingers on the coronoid processes. The patient is then desired to open his mouth, and the surgeon makes a gentle pressure from before backwards on the coronoid process. Nothing more is required to bring the joint to a normal state. The method consists, then, merely in relaxing the muscles by opening the mouth, and in pressing moderately on the coronoid process to push it backwards, and a little downwards.—*Review Medico-Chirurgicale.*

AMERICAN SOCIETY OF DENTAL SURGEONS.

ELEVENTH ANNUAL MEETING OF THE AMERICAN SOCIETY OF DENTAL SURGEONS.

The eleventh annual meeting of the American Society of Dental Surgeons, was held, August, 1850, at Saratoga Springs.

The Society convened at Union Hall, on Tuesday, August 13th, 1850, at 12 M., Dr. E. Townsend, Vice-president, in the chair.

Members of the Society present were as follows: namely, Drs. E. Townsend, C. A. Harris, J. H. Foster, E. Noyes, L. S. Parmly, Jahial Parmly, D. R. Parmly, A. Hill, W. H. Dwinelle, Jas. Alcock, Wm. Dalrymple, E. J. Dunning, H. H. Young, R. Nelson, J. B. Rich, A. C. Hawes, T. Palmer and C. O. Cone.

On motion of C. A. Harris, C. O. Cone was elected Secretary pro tem.

On motion, C. O. Cone, A. Hill and L. S. Parmly were selected a committee of three to arrange the business of the Society. The Society then adjourned to meet at 4 o'clock, P. M.

4 o'clock, P. M.

The Society met agreeably to adjournment.

The report of the committee for arranging the business of the meeting was made and adopted by the association.

The committee of investigation being the first in order, on being called, reported progress.

The report of the tabular sheet, of statistical facts was made by Dr. Cone, and adopted.

The committee on Amalgam appointed at the last meeting of the Society then presented their report through their chairman, Dr. Townsend, and which, on motion of Dr. L. S. Parmly, was adopted. (See page 66.)

After a debate, on motion made by Dr. A. Hill to adopt the resolution accompanying the report of the committee, in which Drs. Rich, J. Parmly, D. R. Parmly, C. A. Harris, J. H. Foster, A. Hill and W. H. Dwinelle, took part; Dr. Hill withdrew his motion for the adoption of the report. The Society then on motion of Dr. Dwinelle, rescinded its vote accepting the report of the committee on amalgam, and on motion of Dr. Dwinelle, referred the report back to said committee, with power to revise or amend.

The committee on amalgam after a short consultation, presented their report amended, which was adopted.

The Society then adjourned to meet at 8 o'clock, P. M.

8 *o'clock, P. M.*

The Society met agreeably to adjournment.

On motion of Dr. C. A. Harris, the resolution accompanying the report of the committee on amalgam appointed by the last meeting of the Society, and which reads as follows, namely:

Resolved, That the several resolutions adopted by the American Society of Dental Surgeons at the annual meeting held 1845, and 1846, having the effect of enforcing subscription to the protest and pledge against the use of amalgams and mineral paste fillings for teeth, be, and the same are hereby rescinded and repealed—was unanimously adopted.

Dr. J. B. Rich then tendered his resignation, which was accepted by the Society.

The Society then adjourned to meet at 9 o'clock, on Wednesday morning.

Wednesday, 9 o'clock, A. M.

The Society met agreeable to adjournment.

The proceedings of the previous day having been read and approved. Dr. C. A. Harris, on behalf of the committee on the publication of the Journal, its present condition, and its future publication; made a verbal report, which was accepted.

The following resolutions were then offered by Dr. A. Hill, and adopted by the Society, namely:

Resolved, That the future publication of the American Journal and Library of Dental Science be, and hereby is discontinued by this Society, and all future ownership of the Society in the publication of the said Journal be surrendered to such member or members of this Society as shall assume itsdebts, giving security for the same to the President of this Society, or his successor in office.

And be it further Resolved, That the President of this Society be, and he is hereby authorized to make the necessary transfer of said Journal to Dr. C. A. Harris, agreeably with the foregoing resolution.

On motion of Dr. C. O. Cone, the following resolutions were adopted:

Resolved, That so much of the 1st section of the third article of the Constitution of this Society, which relates to creating two distinct offices or secretaryships, be amended, so that the first section of the third article of the Constitution shall read as follows: namely,

ARTICLE III.

Section 1. The officers of the Society shall consist of a President, three Vice-presidents, a Corresponding and Recording Secretary, a Treasurer, a Librarian, an Executive Committee, consisting of seven members, and a Publishing Committee, consisting of three members.

And be it further Resolved, That so much of the by-laws of this Society, as relates to the duty of two distinct secretaryships shall be embraced in one.

And be it further Resolved, That so much of the By-laws of this Society as relates to the emolument of the Corresponding Secretary, shall be and the same is hereby rescinded and repealed.

The Society then went into an election of officers for the ensuing year which resulted as follows:

ELEAZER PARMLY, of New York,	PRESIDENT.
ELISHA TOWNSEND, of Philadelphia,	1ST VICE-PREST.
J. H. FOSTER, of New York,	2ND "
J. A. CLEVELAND, of Charleston,	3D "
C. O. CONE, of Baltimore,	COR. & REC. SEC.
E. J. DUNNING, of New York,	TREASURER.
J. H. FOSTER,	LIBRARIAN.

C. O. CONE,
E. J. DUNNING,
D. R. PARMLY,
} PUBLISHING COMMITTEE.

J. H. FOSTER,
E. J. DUNNING,
E. PARMLY,
A. C. HAWES,
C. A. HARRIS,
H. N. FENN,
} Executive Council and Examining Committee.

On motion of Dr. Harris,

Resolved, That the word Council be substituted for the word Committee, in section 1st, article 3d of the Constitution, so that it shall read Executive Council and Examining Committee.

On motion of Dr. Cone,

Resolved, That the number of the committee on Practical Dentistry be, and hereby is, reduced to one member.

Dr. E. Townsend was then appointed a committee to prepare for the next annual meeting, a report on Practical Dentistry.

On motion of Dr. C. A. Harris, the Society adopted the following resolutions:

Resolved, That six members of the Society be appointed to complete the number of aphorisms called for by the Society some years ago, with a request that they prepare them immediately, and place them in the hands of the publishing committee; and,

Resolved, furthermore, That the publishing committee revise and publish, as soon as practicable, said aphorisms, and that at the expense of the Society, and furnish such publication to members of the Society at cost.

The following members of the Society were then selected to prepare the aphorisms, agreeably to the foregoing resolutions.

E. Townsend, E. J. Dunning, A. C. Hawes, J. H. Foster, and C. O. Cone.

On motion of Dr. J. H. Foster, a committee was appointed to take into consideration and report on the expediency of revising so much of the constitution as related to the admission of new members; Drs. J. H. Foster and Jahial Parmly were appointed that committee.

Dr. N. A. Fisher, of Providence, R. I., communicated to the Society, through Dr. A. C. Hawes, his intention of abandoning the practice of the profession, from ill health, and tendered his resignation, which was accepted.

The committee to whom was referred so much of the constitution, as relates to the admission of new members, reported, that in the opinion of the committee, it was inexpedient to make any revision or alteration of that portion of the constitution which was referred to them for their consideration.

The resignation of Charles Meritt, of Bridgeport, Conn., was then tendered, and accepted.

On motion of Dr. C. O. Cone,

Resolved, That all of the surplus numbers of the American Journal and Library of Dental Science, now published, and on hand, be equally divided between C. A. Harris, Amos Westcott and William H. Dwinelle, former editors of said periodical, after each member of this Society, now in good standing, shall have been supplied with such back numbers of those now on hand, as shall complete their sets from the time of their subscription, to the tenth volume, provided they shall have been and are, on the completion of the tenth volume, subscribers to the same.

The Society then adjourned to meet at 4 o'clock, P. M.

4 o'clock, P. M.

Society met agreeable to adjournment, Dr. Foster in the chair.

The committee of investigation, appointed on motion of Dr. Dwinelle, at the last meeting, reported that after a full examination of the case, they find no cause of action against the individual implicated, and that he stands fully vindicated before the Society, which report,

On motion of Dr. C. A. Harris the report was then adopted by the Society.

The Society then adjourned to meet on Thursday morning at 9 o'clock.

Thursday Morning, Aug. 15th, 1850.

The Society met agreeably to adjournment, Dr. Townsend in the chair; the proceedings of yesterday were read by the secretary, and approved.

The minutes of the last meeting of the Society, held in the city of Baltimore, the 25th, 26th and 27th of March, 1850, and as published in the American Journal of Dental Science, in the absence of the records of the Society, was then read by the secretary, agreeably to the order of the association.

On motion of Dr. C. A. Harris,

Resolved, That portion of the minutes of the last meeting of the association, published on page 209 of the tenth vol. of the American Journal and Library of Dental Science, which refers to a motion made by Dr. Cone, requesting a copy of memoir of the late Dr. Nasmyth, for publication, be,

and is so corrected as to embrace some prefatory remarks made by Dr. Harris, accompanying the same.

On motion made by Dr. W. H. Dwinelle, the Society adopted the following resolution:

Resolved, That the minutes of the proceedings of the Society at its meeting in Baltimore, on the 25th, 26th and 27th days of March, 1850, as published in the American Journal and Library of Dental Science, at pages 208, 9 and 10, be, and the same are hereby corrected, by striking therefrom all such portions as relate to the formation or proceedings of what is there styled a committee on grievances; for the reason that all such portions may tend to throw an unwarrantable and unjustifiable suspicion on the character of one of the members of this Society. Such record being an error, as no charges was preferred, it having been regarded by all present that no minute of the case should be recorded.

Dr. Dwinelle then moved that a committee of investigation be appointed to report to the next meeting.*

On motion of Dr. Harris,

Resolved, That the committee on Dental Literature be continued to report at next meeting.

On motion of Dr. Harris, Dr. S. P. Hullihen was continued a committee to prepare an address for the public, and report at the next meeting.

On motion of Dr. Harris. the resolution of the Society accepting the resignation of Joshua and E. G. Tucker be, and hereby is, rescinded.

On motion of J. H. Foster,

Resolved, That the chairman of the executive council be, and hereby is allowed to withdraw Joshua and E. G. Tucker's resignation of membership of this association, and that they be, and hereby are, reinstated in full and active membership from this time.

Dr. Foster, chairman of the executive council, then reported to the association the names of E. D. Wheeler of Murfeesborough, Tenn., and J. D. White of Philadelphia as candidates for membership, they having furnished the vouchers prescribed by the constitution and by-laws, whereupon they were unanimously elected active members of the Society.

Dr. Foster then reported the name of N. A. Fisher as an honorary member, unanimously, elected.

*With regard to the error referred to, in the above resolution, in the published proceedings of the called meeting of the Society, held in March, it is due to the recording secretary to say, that when he sent the manuscript copy, he wrote a letter, requesting us to read it, and make such alterations and corrections as we might deem proper. But being sick at the time, and as the printer was waiting for copy, we sent the manuscript immediately to him, and entrusted to him, the reading of the proof. The letter entirely escaped our notice at the time, and it was several months before we saw it.—*Editor.*

Dr. L. S. Parmly, of New Orleans, then tendered his resignation, which was accepted by the Society.

On motion of Dr. C. A. Harris,

Resolved, That Dr. L. S. Parmly be, and hereby is elected an honorary member of this association.

On motion of Dr. C. O. Cone, Dr. J. H. Foster was elected to deliver the opening address at the next annual meeting of the Society.

The following members were then elected to deliver essays upon some subject connected with dental theory and practice, at the next annual meeting. Dr. E. G. Tucker, of Boston, Dr. A. Hill, of Norwalk, Ct., Dr. E. J. Dunning, of New York, Dr. A. C. Hawes, of Providence. R. I., Dr. R. Nelson, of Albany, New York.

On motion of Dr. C. A. Harris,

Resolved, That the Society when it adjourns, it shall adjourn to meet at the United States Hotel, in the city of Philadelphia, on the 1st Tuesday of August, 1851.

On motion of Dr. C. A. Harris,

Resolved, That Dr. E. J. Dunning be appointed a committee to receive all the papers, books and property of the Society, in the hands of the former secretary, Dr. A. Westcott, and transmit the same to the present secretary, elected for the year ensuing.

Dr. A. Hill then entertained the association with the history of a series of experiments he had been engaged in, and presented a number of metallic plates for mounting artificial teeth, obtained by the electrotype process, as the result of such experiments.

On motion of Dr. C. A. Harris,

Resolved, That the thanks of the association be tendered Dr. A. Hill, for making public the results of his experiments in obtaining, by the electrotype process, metallic plates for mounting artificial teeth, together with a request that he continue his experiments in the same, and report the result to the next meeting of the association.

On motion of Dr. C. A. Harris,

Resolved, That the American Society of Dental Surgeons, deeming the preservation of the health of the dental organism of the highest importance to the comfort and welfare of the whole human economy, approve of the system of hygiene recommended by Dr. L. S. Parmly.

Dr. Dwinelle then presented to the Society a set of artificial teeth mounted for the inferior jaw, showing a novel method of mounting the same, adopted by Dr. Geo. E. Hawes, of New York.

On motion of Dr. C. O. Cone, Dr. Hawes, was requested to detail to the Society, the method he adopted, to attain the artistical perfection in the construction of the piece just described.

On motion of Dr. C. A. Harris,

Resolved, That the thanks of the Society be tendered to Dr. George E.

Hawes for the explanation of a new method of mounting artificial teeth for the inferior jaw.

The subject of adopting metallic plates to the inferior jaw was discussed by Drs. Dwinelle and Dunning, with explanations by Dr. Dwinelle of a method adopted by him in difficult cases, and a description of casting gold plates for the inferior arch by Dr. Dunning. Dr. Cone referred to plans adopted by Dr. P. H. Austin, of Baltimore, for withdrawing difficult casts from sand, so as to secure a perfect mould. Dr. Hawes, by request of the Society, then explained a casting-box which he employed to attain the same end.

The Society then adjourned to meet on the first Tuesday of August, in the city of Philadelphia.

C. O. CONE,
Cor. and Rec. Secretary.

EDITORIAL DEPARTMENT.

NEW SERIES OF THE JOURNAL.

With the completion of the tenth volume, the connection of the Journal with the American Society of Dental Surgeons terminated, and from the issue of the present number, the publication must be considered an individual enterprize, depending for pecuniary support upon its subscription only, and for its literary maintenance upon the exertions of the editor, and of the able friends who have kindly promised their assistance.

Heretofore, the proper revenue of the Journal has not been adequate to its support, and the annual deficiency has been met by a contribution from the association under whose auspices it was conducted. Without such aid, the publication must have been discontinued long since.

No one acquainted with the matter, can doubt that the Journal has contributed, in a very eminent degree, to the advancement of the science and art of Dental Surgery. For the last ten years, its pages have been communicating to its readers whatever discoveries, inventions or improvements have been made in this branch of surgery. For a considerable time, it was the only vehicle for this intelligence—the only receptacle into which scattered facts or perishable suggestions could be gathered and preserved for the common benefit of the profession.

Since the commencement of the publication of the Journal, six other dental periodicals, two in Europe and four in the United States, have been issued. Of these, only three are now published: the New York Dental Recorder, the Dental Register of the West, and the Dental News Letter.

Each of these periodicals received from the Journal a hearty welcome, and the publication of one after another, was hailed as a good omen, an indication that the members of the profession were becoming aroused to the importance of a higher standard of education, and that the resources of dental surgery were becoming more and more developed, to meet the increasing demand constantly made upon them. It is a cause of regret to us, that any one of these journals has been permitted to languish and expire for want of patronage.

The suggestion of a periodical devoted to the interests of dental surgery, originated with us, and it has been our fortune to be connected editorially with this Journal from its commencement. Formerly, however, we were not alone; others shared the responsibility and labor of editorship. Now we are thrown upon our own resources and the generous assistance of our friends.

Most sincerely do we feel the loss of the valuable advice and aid of those who were formerly associated with us; but we have reason to hope for their assistance, and to expect that the pages of the Journal will frequently be enriched with contributions from their pens.

That we shall be able to please all, is more than we can reasonably expect. In a profession composed of men who differ widely in scientific attainments and practical skill, as well as in opinions with regard to etiquette and the proper standard of theoretical and practical requirement for the profession of dentistry, it is scarcely possible to pursue a course approved by all. We must therefore do the best we can. Advocating fearlessly, and to the utmost of our ability, what we may conceive to be right in theory and practice, we will endeavor to pursue an honest, firm, yet modest course, doing nothing but what is right, and submitting to nothing that is wrong.

We wish it to be understood, that, as editor, while we wish to be courteous to all, we must be independent of all, so far as the management of the Journal is concerned. We will never compromise our honor to gratify any man, nor countenance empiricism in any form or disguise in which it may appear.

In thus frankly declaring our purpose, we do not wish it to be understood that we shall denounce those who may hold opinions adverse to our own. We will interfere with no man's privilege of thought. The pages of the Journal shall always be open to well written articles upon any subjects connected with the interests of the profession, or relating, directly or indirectly, to the science and art of dental surgery. It is manifest, however, that the value of a periodical devoted to the advancement of any department of knowledge, must depend, in a great degree, upon the number and ability of its contributors, and our Journal can never attain the high practical and scientific character which we propose, unless we are cordially

aided by the profession. A number of our professional friends have already promised us their aid, and we solicit the co-operation of all who feel any interest in the progress of this branch of medicine.

Our readers will pardon us for mentioning another indispensable requisite for success. It is the promptness of our patrons in the payment of their subscriptions. Publishers of periodicals regard this as a cardinal virtue, and nothing so wonderfully increases their favorable opinion of their subscribers. From past experience, we are sensibly aware of the great inconvenience, amounting often to serious embarrassment, which may be caused by the thoughtlessness of subscribers in not punctually paying the small sums due by them. It is but just, however, to say, that many of the subscribers of the Journal have been very commendably punctual in this respect. From these we hope never to part, and of those who have heretofore been remiss, we have nothing more harsh to say, than to express the hope that they will be more thoughtful for the future.

American Society of Dental Surgeons.—The last meeting of this Association, held the 13th, 14th and 15th of August, at Saratoga, was very well attended, although several of the members who intended to have been present, were prevented from doing so. The President of the Society, Dr. E. Parmly, and the Recording Secretary, Dr. A. Westcott, to the regret of all present, were both absent; the former, in consequence of an injury of one of his ancles, which confined him to his house; and the latter, in consequence of the sickness of one of his children. Two other members, who, as we were informed, had gone to New York, with a view of proceeding to Saratoga to attend the meeting, were prevented from doing so, in consequence of having mistaken the time when it was to take place. They were under the impression that it had been appointed for the first instead of the second Tuesday in August, and not being able to remain from home so long, were compelled to return before the meeting took place. The mistake occurred in this way: nearly all the former regular meetings had been appointed for the first Tuesday in August; but when the called meeting of March last adjourned, it did so, through inadvertence, until the second Tuesday, and the notices of the Recording Secretary were issued accordingly; but several of the members, failing to receive the notice, supposed the meeting would take place at the usual time, the first Tuesday in August.

It will be perceived from the minutes of the meeting, which we publish in another part of the Journal, that the resolutions passed at a former meeting, several years ago, requiring each member to sign a pledge not to use amalgam, have been rescinded. The reasons which determined the Society to do this, are so clearly set forth in the report of the commiitee to whom the matter was referred at the called meeting held in March last, as

to render any comments or explanation from us unnecessary. We may state, however, in a word, that they were based upon the belief that the resolutions had accomplished the object for which they were designed, and that there no longer existed any necessity for their enforcement.

For a detailed account of the proceedings of the Society, the reader is referred to the minutes.

Ohio College of Dental Surgery.—We are gratified to learn from the Sixth Annual Announcement, that the vacancies in this institution have been filled. The following are the names of the gentlemen, who, under the present organization, compose the Faculty, namely: James Taylor, M. D., D. D. S., Professor of Practical Dentistry, and Pharmacy; Thomas Wood, M. D., Professor of Anatomy and Physiology; George Mendenhall, M. D., Professor of Pathology and Therapeutics; A. M. Leslie, D. D. S., Professor of Mechanical Dentistry; and William A. King, D. D. S., Demonstrator of Mechanical Dentistry and Assistant Surgeon in the infirmary.

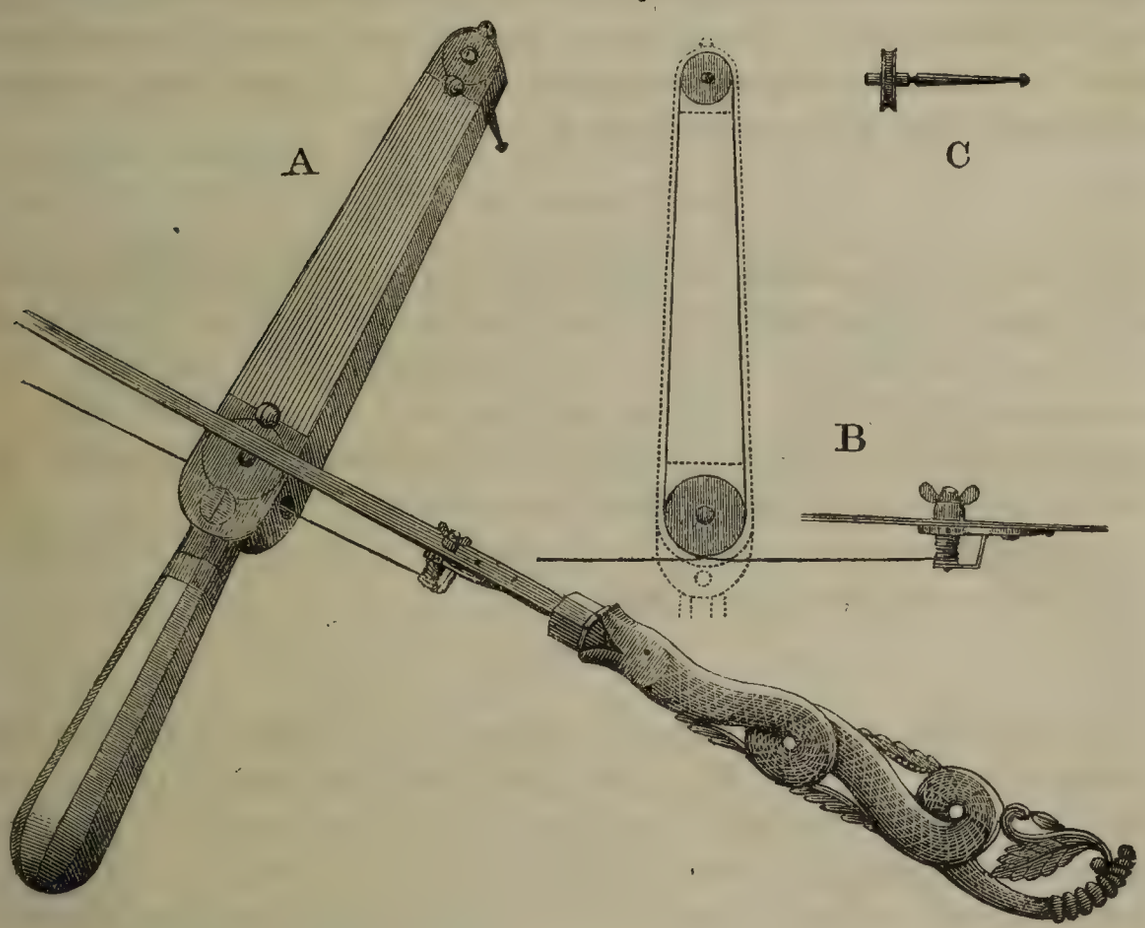
With Dr. Taylor, we have been personally acquainted for many years, and know him to be zealously devoted to the interests of the profession and the advancement of dental surgery. We doubt whether a more competent person could have been obtained for the chair which he occupies in the institution. Drs. Wood and Mendenhall are too favorably known in the medical profession to require commendation; and we doubt not that Drs. Leslie and King are well qualified to teach the branches to which they have been assigned.

With the institution of colleges for the education of young gentlemen for the practice of dental surgery, commenced a new era in the history of the profession. Previously to this time it was supposed, except by the educated and better informed practitioners, that a sufficient amount of knowledge might be obtained in a few days or weeks, or months at most, in the mechanical work-shop or laboratory of a dentist; and hence, the ranks of the profession had, for years, been rapidly filling with ignorant and illiterate men, until the very name, in many parts of the country, had become a by-word of reproach.

But, although this state of things is gradually passing away, and although a higher standard of qualification is beginning to be regarded as necessary to successful practice, years will still have to elapse before a college of dental surgery will be sufficiently patronised to afford professors a fair remuneration for the labor and time they must necessarily bestow in teaching, or to refund the money which ought to be expended in the procurement of the necessary facilities for it, and defray the current expenses of such an institution. Those, therefore, who are at this time engaged in teaching, must be influenced by higher motives than present pecuniary reward, if they would not be disappointed in their hopes and ex-

pectations. But we believe the time will ultimately arrive, when the demand for dental collegiate education will be amply sufficient to sustain three or four colleges in the United States.

New Drill-Stock.—We are indebted to Dr. W. W. H. Thackston, of Farmville, Va., for a very beautiful drill-stock, which he has recently invented for opening cavities in molar teeth, when the mouth of the patient is too small to be conveniently reached and efficiently acted upon with the instruments ordinarily employed for this purpose. We have tried it in one or two cases, and it worked remarkably well. The instrument was manufactured by Mr. F. Arnold, of Baltimore, and is represented in the cut below.



A represents the instrument with the bow and drill in it; B the movements, showing the pullies and bow-string; C the pully at the end of the instrument with a drill or burr in it.

Although it is seldom that an instrument of this kind is needed, yet, cases do occasionally occur in which one may be advantageously employed. We met with a case, not long since, of a young lady, who, from salivation, had lost, almost wholly, the use of the sphincter muscle of the mouth. The opening was so small as to render it nearly impossible to act efficiently upon her molar teeth, with any other description of instrument, and there are cases, too, where the mouth is naturally so small as to render the use of a straight burr drill exceedingly difficult, if not wholly impossible.

Gum Elastic in the Treatment of Irregularity of the Teeth.—The substitution of gum elastic for silk, and, indeed, every other description of ligature in the treatment of irregularity of the teeth, has been attended with the most satisfactory and happy results. Its great superiority consists in the steady and constant traction which it exerts upon the deviating tooth. The usual method of employing it, consists in tying a ligature of silk to each end of a piece of gum elastic of the requisite size and length, leaving both ends of each sufficiently long to be secured to the fixed point and the tooth, the position of which is to be changed. But it will be seen from an extract of a letter, which we publish in another part of the Journal, from Dr. E. G. Tucker, of Boston, that he has had it prepared expressly for the purpose, superceding altogether the necessity of ligatures of silk. It consists of hollow tubes, varying in size and in the thickness of their walls, but for a description of the manner of using them, we refer the reader to what Dr. Tucker says upon the subject. We have used them, and can recommend them with confidence to the profession.

Premium Teeth.—At the late Mechanics' Fair of the Maryland Institute, a silver medal was awarded to Jones, White & Co. for the best specimen of single, plain and gum porcelain teeth, exhibited on the occasion. We are indebted to Mr. White, one of the firm, for a sample of the teeth exhibited at the Fair. They are certainly very beautiful, approaching the natural teeth as closely in appearance as any we have seen.

A diploma was also awarded to Dr. Burton of Baltimore, at the same time, for the best specimen of block teeth.

A *New Preparation of Gold for Filling Teeth.*—Within the last few weeks several dentists in New York, have tested the value of sponge gold, as a substitute for gold foil in filling teeth, but to what conclusion they have arrived with regard to it, we have not been able to ascertain. We have been informed, however, that some are disposed to think very favorably of it.

The preparation is of a reddish brown color, and readily crumbles into a fine powder on being rubbed, but on being pressed together, it at once becomes a compact mass. A few weeks ago, we received from the manufacturer, Dr. Maire, through Dr. G. E. Hawes, of New York, a small quantity of it, with a request that we would try it. This we have done, but our experiments as yet are too limited to enable us to say much with regard to its value. We tried it in the cavity of a dead tooth out of the mouth, and succeeded in making a very solid filling. The surface assumed the color of gold and presented a highly polished and beautiful appearance, but on removing it from the tooth, we found that every other part retained the reddish brown color of the sponge, with here and there the lustre of a par-

ticle of gold. For front teeth, this would constitute an insuperable objection to its use. On breaking it, the fractured surfaces had the same appearance. We have also seen two incisors that were filled with it which were considerably discolored.

It may, perhaps, answer a very good purpose for filling a cavity in the grinding surface of a molar tooth, but as it crumbles into powder so readily we should not think it could be employed for filling a small cavity in the approximal surface of any tooth where the aperture between it and the adjoining organ was very narrow. It is possible, however, that some may have discovered a method of introducing it into the cavity of a tooth of which we are ignorant, and as our experiments with it have been very limited, we would be glad if some of our brethren of New York, who have given it a thorough trial, would favor us with their opinion with regard to its value.

Artificial Teeth set in a Base of Block Tin.—In another part of the present number of the Journal will be found two articles, one from Dr. E. G. Hawes, of New York, and the other from Dr. W. A. Royce, of Newburg, N. Y., on the use of tin as a base for artificial teeth. With regard to the value of tin for this purpose, we are unable to speak from expeperience. We saw a lower set secured in a base of this sort, which had a covering of gold, put on by the electro-galvanic process, constructed by Dr. E. G. Hawes, of New York. It certainly presented a most beautiful appearance, and if a coating of gold sufficiently thick can be put on to prevent it from wearing off and exposing the tin, and we would suppose it might be done, we know of no reason why a base of tin would not answer as good a purpose for artificial teeth for the lower jaw, as one composed altogether of gold. There are many cases where weight is desirable, and in such, it might be preferable. From the specimen put up by Dr. H., which we saw, we are disposed to think very favorably of it. It affords quite as secure an attachment for the teeth as the means usually employed for connecting them to a gold base. But time may be required to determine the real value of it.

Zeiderholz's Self-acting Blow-pipe and Lamp.—This lamp, although intended for druggists, assayists, chemists and apothecaries, as well as dentists, is admirably adapted for the laboratory of the latter. It furnishes a sufficient amount of heat for melting lead, tin, or zinc. It has two reservoirs for alcohol, and the flame from the surface of the one, which is the central, heats the alcohol in the other, which is a hollow cylinder surrounding this, causing rapid evaporation; the gas escaping through a tube that terminates in the center of the first reservoir, a little above the

surface of the burning fluid, throws the flame against the bottom of the ladle placed a little above the lamp. We have had one in our laboratory for a little more than two months, and finding it very useful, we are induced to recommend it to the profession. It occupies but a little more room than an ordinary lamp, and may be obtained at the low price of five dollars, and we presume, in nearly all the large cities. We procured ours from Jones, White & Co.

Correction.—At the meeting of the American Society of Dental Sur geons, held at Saratoga, August, 1848, Dr .C. C. Allen sent in his resignation of membership, and, as is usual in cases where the dues have not all been paid, and in accordance with a requirement of the constitution, a resolution was offered and passed to the effect that the resignation be accepted, when his dues were paid. Now, in the case of Dr. A., there were no dues owing to the society. They had all been paid up to that time, and the resolution must have been offered and passed without any reference having been made to the book of the treasurer. This statement is due to Dr. Allen, and we trust it will correct any false impression that may have been made by the published proceedings of the meeting above referred to.

Nomenclature of the Teeth.—Mr. Tomes, in a paper "On the Structure of the Dental Tissues of Rodentia," communicated to the Royal Medical and Chirurgical Society, by William Bowman, Esq., F. R. S., May 30, 1850, and published in the London Medical Gazette, proposes the use of the following terms, as indicative of the number and arrangement of the component tissues of the teeth. He terms a tooth which has one central pulp-cavity, with tubes radiating from thence to every part of the dentine, a *dentinal system.* We see no particular objection to the term, but the inferred tubularity of dentine, though supported by high authority, we are inclined to think incorrect. When such a tooth is partially or wholly covered with enamel, he terms it a *denticle.* "A tooth composed of several dentinal systems, each of which more or less invested with enamel, and the whole united into a mass by cementum, he describes as a tooth composed of *denticles;* but if the dentinal systems are united without the intervention of enamel or cement, as a tooth composed of *dentinal systems.* If the systems are united "by a narrow strip of dentine throughout their length, the tubes belonging as much to one as to the other adjoining system," he speaks of it as a tooth made up of *confluent dentinal systems,* and if each is partially invested with enamel, as a tooth composed of *confluent denticles.*

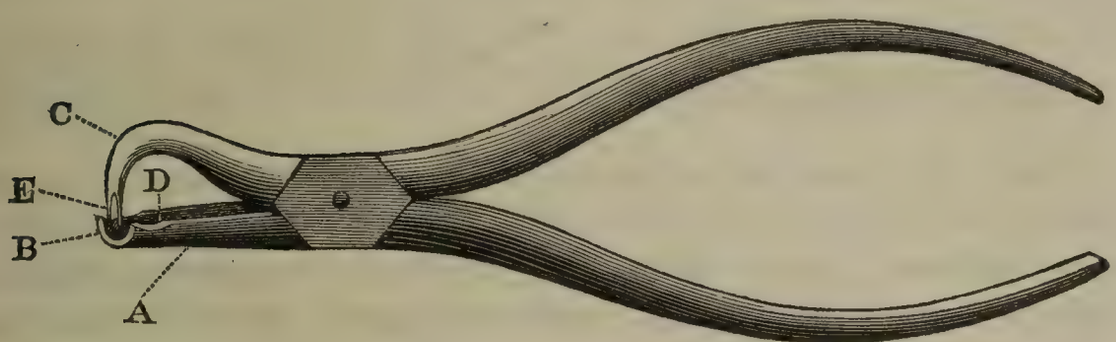
As the paper of Mr. Tomes, to which we have referred, contains some interesting information with regard to the teeth of rodentia, we may sometime hereafter transfer it to the pages of the Journal.

MONTGOMERY, ALA, *July 29th*, 1850.

DR. C. A. HARRIS:

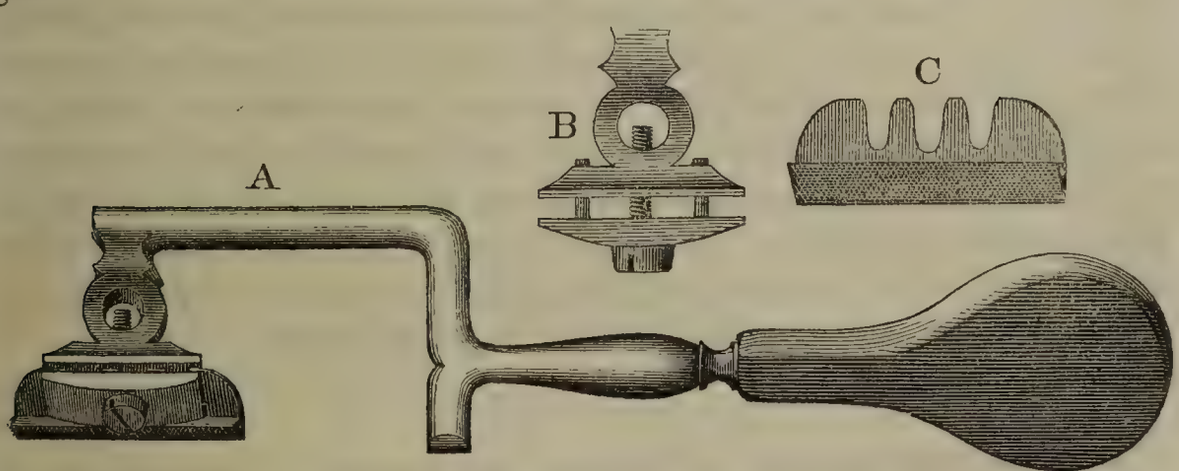
Dear Sir:—I herewith send you a sketch of an instrument, the invention of which is claimed by J. W. Torrence, a dentist of Loundsboro, Ala. From *experience*, I must say, it is the best for holding teeth, for the purpose of grinding them, that I have seen. It is at your service, and of the profession generally.

Yours, very respectfully,
SAMUEL RAMBO.



A, lower beak; B, groove to receive the tooth, lined with gutta percha, which is held by cement; C, upper beak; D, depression to receive the face of the tooth; E, point of upper beak, bifurcated to straddle the pivots.

A New File-Carrier.—Some two or three years ago, we published an engraving and description of a file-carrier, invented by Dr. Westcott, which was afterwards improved by Dr. Elliot; and now we announce another, constructed by Dr. Tyrrell, of York, Pa. The annexed cut will convey a better idea of the instrument than any description of it which could be given.



A represents the instrument with a file in it. B, the part that holds the file, which may be opened and closed by turning a screw; and C, the file.

As will be perceived, it is necessary to have files made expressly for the instrument. Although Dr. Tyrrell was kind enough to present us with one of the instruments, we have not, for want of suitable files, had an opportunity of using it. We have no hesitation, however, in pronouncing it to be good.

New York, *October 11th*, 1850.

Dear Sir:—In your last edition of "Principles and Practice of Dental Surgery," you have done me the honor to mention my case of supplying an artificial palate, and also copying the illustrations; but you have omitted my christian name. As there are several *Mr.* Rowells in New York, and as the Journal of Medicine may not be at hand for reference, I have to request you, if you have occasion to use my drawings, &c., in future, to do me the justice to add my christian name, and oblige

Yours, &c.

WARREN ROWELL.

To Chapin A. Harris, M. D. 149 *Madison-st., N. Y.*

Note.—We were not aware of the fact, until we received the above communication, that there were more than one dentist in New York by the name of Rowell; but should another edition of the work be called for, it will give us pleasure to comply with the request of Mr. R. In the mean time, we hope the publication of the above note will serve to correct any doubtful impression with regard to the real author of the operation, which the omission of the christian name may have made upon the minds of those into whose hands the work may have fallen.—*Editor.*

The New York Medical Gazette and Journal of Health, is the title of an ably and spiritedly conducted weekly journal, published in the city of New York, under the editorial management of D. Meredith Reese, M. D. It is designed for the non-professional as well as the professional reader, and although it has only been published about five months, we are gratified to learn, that it has already obtained an extensive circulation in nearly all the states of the Union. The editor is unflinching in his opposition to empiricism, and while he is devoting his splendid talents and best energies to the advancement of medical knowledge, he is equally zealous in his efforts to diffuse correct information on all matters relating to the means for the preservation of health among the people at large. Such a paper ought and we trust will be liberally sustained. The dentist would derive as much benefit from its perusal as the physician or general reader.

The New York Register of Medicine and Pharmacy, Edited by C. D. Griswold, M. D.—The above is the title of a semi-monthly journal, published in the city of New York. We have received Nos. 2 and 3, and judging from these, it is conducted with much ability. Each No. contains several valuable and interesting papers, besides a number of spiritedly written editorials. We wish the Register abundant success.

Cleaning Plates after Soldering.—Dr. S. F. Stearns, of Boston, recommends a method, and we believe it has also been adopted by others, by which the crystallized borax and discolorations of a plate after soldering, may be almost instantly removed. It consists in putting the piece, first, in a glass or porcelain vessel, with a sufficient quantity of water to cover it, then pouring in sulphuric acid until the discolorations on the plate disappear. The affinity of the acid for the water is such that the combination produces great heat, and it is this increase of the temperature of the mixture that causes it to act so promptly upon the crystallized borax and carbonaceous matter adhering to the plate. The same result will be produced by heating the mixture over a lamp, as is known to most jewellers and mechanical dentists.

Transylvania School of Dental Surgery.—From a notice and advertisement in the "Progress of the Age," a newspaper published in Lexington, Ky., we learn that a school of dental surgery, under the above title, chartered by the legislature of Kentucky, 1850, will commence its first session on the first Monday in December.

The faculty is composed of:

J. B. Stout, M. D., of Lexington, Ky., Professor of the Institutes of Dental Science; John B. Lindsay, D. D. S., of Flemingsburg, Ky., Professor of the Principles and Practice of Dental Surgery; B. J. Dudley, D. D. S., of Maysville, Ky., Professor of Operative and Mechanical Dentistry; Jas. S. Drane, M. D., of New Castle, Ky., Professor of Special Anatomy, Physiology and Pathology; and Dr. G. W. Evans, of Lexington, Ky., Professor of Dental Chemistry, Hygiene and Therapeutics.

Candidates for graduation are required to attend two courses of dental lectures, the last to be in this institution, or one course of medical lectures and one course in this school; and practitioners of dental surgery, of good standing, upon satisfactory examination, are entitled to the same privilege.

Although we have but little knowledge of the competency of the faculty to teach, the editor of the paper containing the advertisement, speaks of the prospects of the school in the most confident terms, and of the scientific attainments and practical skill of the gentlemen who occupy the several chairs in the institution.

Filling Teeth after the Lining Membrane has become Exposed.—Dr. W. W. Codman, of Boston, informed us, while on a visit to that city last summer, that he had been in the habit, for several years, of filling teeth, under certain circumstances, after the lining membrane had become exposed, and with very great success. He also stated, that he was of the opinion, from a number of experiments which he had made, that the pulp

of the tooth, when the operation is successful, sooner or later ossified. He presented us with several teeth in which this had actually occurred.

In a former number of the Journal, we took occasion to offer a few remarks on filling teeth under such circumstances; and in another place have treated upon the subject at some length. Still we do not feel fully warranted in recommending it very confidently. We design, nevertheless, to give the result of our experience and observations upon the subject, in a future number of the Journal, and in the meantime we would be glad if those members of the profession who have been in the habit of performing the operation, would furnish us with such facts in relation to it, as may have come to their knowledge.

Dental Files.—Until within the last few years, the dentists of the United States were wholly dependent on Stub's manufactory in England for all the files they used. In fact, the superior excellence of the files of this manufactory, for the teeth, has been universally acknowledged. The quality of Stub's separating files for the front teeth have never been surpassed, and, until quite recently, we supposed him the only manufacrurer in the world who made a file suitable for the teeth, but we have lately used some molar files, and also some files of Dr. Townsend's invention, manufactured by Mr. Murphy, of Philadelphia, equal in quality, to any we have ever used. We mention this for the information of those who may not be aware of the fact that dental files are manufactured in this country.

Obituaries.—We recently received a letter from Dr. Rodrigues, written at Paris, announcing the death of Dr. Leonard Koecker, of London. Dr. Koecker, as we have been informed, commenced practice in Baltimore, in 1807, but soon after moved to Philadelphia, where he acquired considerable celebrity as a practitioner. We believe he went to London about the year 1822, where he continued to exercise the duties of his profession until near the period of his death. As an operator, Dr. K. enjoyed a deservedly high reputation, and he has contributed very liberally to the literature of dental surgery.

We also announce, with regret, the decease of Dr. Lewis Roper, of Philadelphia. He died on his way from San Francisco, California, to Panama, of cholera.

We received a letter a few days since, announcing the death of Dr. J. Jones, of Dayton, O. Dr. Jones was not only highly esteemed as a dentist, but enjoyed the friendship and confidence of all with whom he was acquainted.

The last number of the Dental News Letter, announces, too, the death of Dr. Blakely, of Havana, Cuba.

A punctured wound, other things being equal, is a much more severe injury than a simple incision. It is both a lacerated and contused wound, and of course is fraught with the peculiar dangers attending such injuries. But, moreover, it is inflicted upon deeply seated parts; vital organs may be reached; large vessels and nerves punctured; even bones penetrated or splintered. Wounds of the more deeply seated parts do not heal with the same facility as the skin; they are more out of reach of dressing and manipulation; they suppurate, and the matter is liable to form sacs or pouches, or to be infiltrated into the adjacent parts, acting as an irritant, and spreading inflammation in its course.

The constitutional impression also is greater when deep seated parts are wounded, than when superficial injuries, even of greater extent are suffered.

The danger of punctured wounds depends upon the extent, situation and character of the injury, and the age, constitution, &c., of the subject.

The indications for the treatment of a punctured wound are, 1st. To remove any fragment of the instrument by which the injury has been inflicted; 2d. To secure any artery which may have been wounded; 3d. To place the part in the easiest and most relaxed position; and, I am tempted to say, 4th. To let it alone. I am convinced that much injury is done by attempts to aid nature in her efforts at reparation, when she is abundantly competent to complete the work without active assistance. Some surgeons inject stimulating applications, in order to bring about inflammation, which is sure to ensue soon enough if the health of the patient permit. Others advise to lay the wound open, and lengthen it so as to convert it into a deep incision. This is often impracticable without doing vast injury, is always painful, and when accomplished will not prevent the natural consequences of the laceration already suffered. The object of this practice is to prevent the accumulation of the matter; but generally the matter will escape readily enough, and surely it will be time enough to provide for the evacuation of retained matter, when it shall be ascertained to exist.

Sometimes the lips of the wound tend to heal before the more deeply seated parts have established their suppuration. This can be prevented by introducing a pledget of lint, or a "tent," into the wound, and keeping it there until the growth of granulations from the bottom and the adhesion of the sides are completed.

The tent should be removed every day, and a shorter introduced, from time to time, until the cure be completed.

Constitutional symptoms are to be treated upon general principles. Before inflammation is established, and while the system is suffering from the pain and shock, opium will be our most important means. Should inflammatory symptoms run high, blood-letting and other antiphlogistic means will be required.

Gun-shot Wounds are violent contusions made by dense bodies moving with great momentum. The injuries thus inflicted are serious in proportion to the extent of the wound and the importance of the parts involved. These wounds generally bleed but little, but even when slight, and penetrating only fleshy parts, they produce a remarkable constitutional shock, manifested by faintness, feeble pulse and muscular weakness.

Gun-shot wounds must be treated upon the principles which apply to all other mechanical injuries. If the ball or other projectile can be removed without difficulty, it should be done; if it cannot be readily found and dislodged, it is better to let it alone, as much more injury will be done by groping after it among the lacerated parts, than by its presence. Generally it will come away in the suppuration. Sometimes the wound heals over it, and it may remain for years imbedded in bone or muscle, without causing inconvenience.

The notion which prevailed formerly, that lead, when projected by gunpowder, is poisonous to the flesh, is a mistake. This metal does no injury, except by its weight.

Burns.—Injuries caused by the action of fire or heated solid bodies are indiscriminately called *burns:* when the result of contact with heated fluids they are called *scalds.* Of course injuries from these agents must differ very much according to extent and degree; varying from the slightest perceptible ery-

thema to gangrene of the parts, and from a very limited to a very wide spread wound. Indeed, under the common name burn, as under the general term wound, are grouped together a great variety of injuries, alike only in the fact that they are caused by fire or heated bodies. Yet it is common to speak of remedies for *burns*, as though all of these injuries were alike, and required the same treatment. There is no branch of surgery in which empiricism retains its ground as firmly as in the treatment of burns. A great number of applications have been lauded as specific for these conditions, and when, from some terrible accident, a large number of persons are scalded, it is mortifying to notice the want of all agreement among physicians as to the proper management of the distressing cases which clamor for relief, and the dogmatic empiricism with which nostrums are insisted upon by professional men, who are unable to give any satisfactory reason for their extraordinary confidence in their own suggestions.

Some years ago a steamboat started from the wharf in this city, upon a trial trip, and exploded before she had gone a hundred yards. Many persons who thronged her decks were scalded and blown into the water. When taken out, they were chilled and shivering, with feeble pulse, laboring under great constitutional irritation.

Under these circumstances, it was painful to notice the modes of treatment adopted, upon opinions of specific virtue in certain agents, without any apparent regard to the probability of good, as inferred from their known qualities, and the condition of parts to which they were applied.

Cold water, spirits of turpentine, raw cotton, soot, soap, with many other applications, have been strongly advocated as dressings for burns; yet certainly it would require an utter disregard of rational conduct to apply turpentine to the extended surface of an abraded cutis, or cold water to the shivering skin of a feeble patient, whose whole constitutional effort cannot accomplish reaction.

The danger of burns is in proportion to extent rather than degree. A small portion of the body might be burned to

complete destruction, with far less danger than a large surface could be reddened and vesicated.

Scalds, therefore, which are superficial burns, are very dangerous, because, from the diffusible nature of their cause, they are generally extensive.

The reason is, 1st. Because the *pain* of burns is the prime cause of the constitutional distress, and of the serious or fatal consequences that ensue, and superficial burns of the skin are generally most painful and most extended; 2d. The skin has powerful sympathies with the mucous membranes of the bowels and lungs, and these are very apt to assume serious inflammation when the skin has been extensively scalded. 3d. The functions of the skin are important, and cannot be extensively interrupted with impunity.

From the last two causes, it happens that scalded persons are apt to die of pulmonary engorgement, and not because they have "inhaled steam," as has been so commonly supposed.

Where burns or scalds are superficial, the great object is to protect the irritated surfaces from the air, which is most distressing to them. To this end, nothing is better than the raw cotton, which, to prevent its adhesion to the sore, should be moistened with some unctuous substance. Linseed oil and lime water mixed together are commonly used for this purpose, and the mixture answers very well. The cotton thus treated forms a soft, warm, innocent dressing, and is as good a substitute for the skin, (and this is what we want,) as we can procure. Wheat flour or other farinaceous matters sprinkled on until the part is completely covered and protected, will answer a similar purpose. For obvious reasons, the cotton is preferable. A coating of gum arabic, applied in solution, has been used with good results.

If there be no blistering or abrasion of the surface, the injury being severe erythema, cold water will give immediate relief.

Sometimes the part upon which the burn has been immediately inflicted will be disorganized or nearly so; the surrounding parts, and those subjacent, partaking of the injury in proportion to their propinquity to the place of contact.

In such cases, as the vitality of the parts is nearly exhausted, and gangrene likely to take place, the stimulating agents, turpentine, &c., may be very properly employed.

In short, the treatment of burns, like that of other injuries, must depend upon the judgment of the surgeon, in view of the peculiar condition of the injury.

Burns leave large and unseemly scars, which pucker as they contract, and often cause permanent deformity by the shortening of skin and muscles. It is important, in the treatment of these injuries, to guard against this tendency as much as possible, by preventing those positions which, though most easy to the patient, will permit the contraction above mentioned. Care must be taken, too, that two burned surfaces be not brought together and kept in contact. I once saw a child whose hands were rendered entirely useless through neglect of this precaution. The palms had been burned, and the mother bound up the closed fists, and suffered them so to remain until palmar adhesion and permanent muscular contraction rendered the organs entirely useless.

Fractures.

A fracture is a solution of continuity of a bone, produced by violence, acting either by some external agent, or, occasionally, by the sudden and extraordinary contraction of muscles.

A fracture may take place transversely, obliquely, or longitudinally. The difficulty of adjustment and reparation will be in accordance with certain circumstances which give character and importance to the injury.

Cæteris paribus, a simple division of the bone transversely, or a longitudinal fissure of moderate length, will involve much less suffering from injury to the soft parts, and will be much more likely to heal without deformity, than a fracture which is oblique; because, in the former cases, there will be but little if any displacement of the broken surfaces of the bone, while in the latter the muscles attached to the separated part are apt to draw it out of its position, and cause it to ride upon the fixed portion.

The action of the same muscles is of course continually opposing the force used to keep the restored fragment in place.

Fractures may be *comminuted*—that is to say, the bone may be broken into small fragments; they may be *compounded*, that is, may be associated with injuries, more or less serious, of the soft parts covering or covered by the bone, such as lacerations of the muscles, skin, protrusion of fragments of bone through the integuments, &c.

Fractures are said to be *complicated* when attended by some accident or condition which materially embarrasses the treatment and cure. Thus a large artery may be wounded, an important viscus injured, or a constitutional disease, affecting the vitality of the bones, may exist.

Treatment of Fractures.—The general treatment of fractures consists in meeting the following indications: 1st. To restore the displaced pieces of bone to their natural position. 2d. To keep them there; and 3dly. To afford any additional aid which the nature of the injury and the constitutional circumstances may require. It does not always happen that the fragments are displaced. In such cases the duty of the surgeon, so far as the condition of the bone is concerned, requires no more than to support the parts, and place them in such a position as will best guard against displacement. It will be seen that the surgeon has nothing whatever to do with the production of bony union. That is entirely the work of nature, and is accomplished by the formation of a hard intermediate substance, which is called *callus*.

Soon after the injury, a swelling is observed around the broken ends of the bone, which gradually hardens until it surrounds the fracture with a kind of bony splint, within which the process of reparation goes on. This is called the *provisional callus*. As the cure advances, this hard swelling subsides, though it rarely entirely disappears, and the bone is found to be permanently united by an organized osseous substance, which well subserves all the purposes of the lost bone.

According to the experiments of Breschet and Villerni, the following are the principal circumstances remarked during the process of reparation of fracture.

1. Extravasation and coagulation of a small quantity of blood between the ends of the fracture, which blood escapes from torn or ruptured vessels.

2. A fluid, at first of a viscid quality, effused and secreted as it were between the periosteum and the bone, and likewise exuding from the surfaces of the fracture, and from the soft parts.

3. A gradual increase in the quantity and consistency of the preceding substances blended together, forming every day a stronger connection between the parts; then their change to a red intermediate substance between the fragments and between the bone and periosteum to a substance which is at first soft, but in the end acquires the character of bone.

4. At the fractured parts a reunion of the periosteum and soft parts, which are equally indurated and confused together with the intermediate substance between the fragments.

5. A diminution and then an obliteration of the medullary cavity, at first by a cartilaginous, and then by a bony deposition.

6. Successive ossification of the whole of the swelling composing the callus, and of the substance between the fragments, preceded by a fibrous and cartilaginous state.

7. The return of the soft parts around the fracture, and then of the periosteum to their natural state.

8. After the union of the surfaces of the fracture, the medullary cavity and texture are gradually re-established, and the swelling formed by the callus always diminishes.*

Whatever may be the process by which callus is formed, it is during the first two or three weeks after the fracture that the fragments undergo the changes which promote their reunion. But it is within the twentieth and thirtieth, and especially between the thirtieth and fiftieth days, that nature labors effectually in consolidating the callus. Hence, at this period, our care to retain the ends of the fracture in exact contact and perfectly at rest, should be redoubled, for though there are a few instances in which deformity really proceeds from irregular ossification, it is a fact that the deformity almost always originates from the fracture being disturbed and not kept properly reduced.†

* Cooper's Surg. Dic., Art. Fractures. † Boyer.

Fractures of the Jaws.—The lower jaw is liable to be fractured at any part of its extent, as between the symphysis and the masseter muscle, within the muscle, and between it and the angle. The bone may also be broken in two places simultaneously. Sometimes, also, the condyles, and less frequently the coronoid processes, are broken off.

Fractures of this bone may be perpendicular, oblique or longitudinal. Sometimes a part of the alveolar process with its teeth has been split off.

When the fracture is near the symphysis, the submaxillary muscles will draw down the part to which they are attached, while the other fragment, released from the counteraction of those muscles, will be proportionably elevated by those which close the mouth. When fractured in two places, the middle fragment will be drawn downwards and backwards, while the lateral portions will be supported by their muscular attachments. When the fracture occurs within the masseter, little displacement can take place, as the muscle attached to both fragments keeps them in their natural position.

Fractures of the lower maxillary may generally be detected without much difficulty.

If, after a severe blow or fall, there should be severe pain in the jaw, attended with laceration and swelling of the soft parts; if the line of the bone be irregular; if crepitus be felt; if the gums be denuded, and if the level of the teeth be interrupted, there can be no doubt that fracture has occurred.

Nor is it necessary that all these appearances shall be present in order to satisfy the observer of the nature of the injury. As the bone can be traced with the finger along its whole length, and its level observed both upon the upper and lower margin, the displacement or crepitation, and the pain or disability of motion, will sufficiently indicate the kind and point of injury.

There is little difficulty in replacing the fragments of a fractured lower jaw. We have but to push the displaced part upwards and a little forwards, and press it exactly into a line with the fixed portion—observing that the teeth are also properly level. It is not so easy, however, to keep the parts in

their proper place, but the upper jaw being fixed, enables us to sustain the lower one against it.

A piece of pasteboard, moistened and softened with vinegar, or, if there be excoriation, with water, is first adapted to the basis of the jaw. A four-tailed bandage is then employed to keep the parts in position. This consists of a piece of muslin or flannel, several inches wide, the centre of which is perforated for the reception of the chin, and the two ends divided longitudinally, so as to make two tails on each side. The anterior of these are carried up the side of the face, and secured to a night-cap posteriorly, and the posterior tails anteriorly. The patient must keep his mouth closed as nearly as possible, refraining from talking, and subsisting upon fluid or semi-fluid food.

Sometimes a tooth will be split in the fracture, and must be extracted. It sometimes happens, also, that the teeth are so irregular as to prevent the complete closure of the jaws, in which case a piece of cork may be so placed as to accomplish the purpose of supporting the lower by pressure against the upper jaw.

Dr. Rhea Barton, of Philadelphia, devised a bandage for fractures of the jaw, to which many surgeons give a preference. He commences with a roller an inch and a half wide, below the prominence of the occiput, and continues it obliquely over the centre of the parietal bone across the juncture of the coronal and sagittal sutures, over the zygomatic arch, under the chin, and pursuing the same direction on the opposite side, until he arrives at the back of the head; he then passes it obliquely around and parallel to the basis of the lower jaw over the chin, and continues the same course on the other side, until it ends where he commenced, and repeats.*

When the condyle is fractured, the external pterygoid muscle pulls it forwards, and it is by no means easy to apply such a force to the deeply seated fragment as to bring it in contact with the body of the bone. Our only alternative is to press the

* Reese, Note Cooper's Surg. Dict.

lower portion as well as we can to the condyle, by placing a thick compress upon the angle of the jaw, and applying our bandages so as to press upon this part of the bone.

Compound fractures of the jaw are to be treated as similar injuries elsewhere. Every attention must be paid to ensure cleanliness, contact and rest of the parts, and constitutional symptoms are to be met by antiphlogistics, anodynes and tonics, as cases may require.

Dislocations or Luxations.*

The forcing of articular surfaces out of their relative position is called a dislocation or luxation, or familiarly, putting out of place. These injuries require surgical aid, it being rarely possible for the patient to replace the bone by his own efforts.

The cause of dislocations is generally external violence, especially falls, but they may be occasioned by the sudden and violent contraction of muscles, and these latter are always more or less concerned both in effecting dislocation and repairing it.

Luxations may be *complete* or *incomplete*. They are complete when the articular surfaces no longer touch; incomplete, when they remain partially in contact.

They are necessarily attended with rupture or violent elongation of ligaments.

The symptoms of dislocation are pain and incapacity of the part, change of position and relation of the bones which form the joint, ascertained by the touch and by the position of the limb or part. Sometimes, also, special symptoms, indicating the pressure of bone upon sensitive or important parts, attest the nature of the injury.

Dislocations of the Lower Jaw.—From the latitude of motion enjoyed by the lower maxillary bone, and the necessary looseness of its articulation, it is very subject to dislocation, though this can only take place in one direction, forwardly, and not then unless the mouth be wide open and the chin depressed greatly at the moment of the injury.

* *Dis loco*—to get out of place.

Sometimes when parties are in high altercation, and one of them is vociferating loudly, a blow from the other, falling upon the expanded jaws, will put a stop to the flow of epithets or recital of grievances, by dislocating the submaxillary. Sometimes, also, after the jaw has been previously dislocated and the ligaments relaxed, yawning will be sufficient to bring the condyles to slide forward, and the ligaments giving way, to glide beneath the zygoma.

The injury has resulted from the use of great force in extracting a tooth, the jaw being much depressed at the same time that great force was exerted upon a posterior tooth, elevating and pulling forward the posterior part of the bone.

Dislocations of the jaw are very painful, owing to the pressure of the condyles upon the deep seated temporal nerves, and those which go to the masseter, which nerves pass before the root of the zygomatic processes.—(Boyer.) The mouth is open and immovable, the patient speechless, the saliva running from the mouth, and the countenance expressing great distress and anxiety. If the dislocation be long continued, the jaws are more nearly approached than when the injury is recent. The coronoid process forms under the cheek bone a prominence which may be felt through the cheek or from within the mouth.*

Upon the whole, it is not easy to mistake the character of the injury.

Dentists should be aware of the possibility of such an accident as this when extracting a tooth, and should guard against such a position of the jaw as would be favorable to it. It may happen, however, even in the hands of the most skilful and prudent, and they should be prepared to reduce the dislocation immediately.

Mr. Fox dislocated the jaw of a patient on both sides, while endeavoring to extract a tooth for him.

The manner of replacement is very simple. The operator must first wrap his thumbs thickly with cloth of some kind, to protect them from injury. He must then place them as far

* Cooper's Surg. Dict.

back in his patient's mouth as he can, and while he depresses the posterior part of the jaw with them, he must elevate the chin with his palms and fingers. This process disengages the condyles from beneath the zygoma, when the muscles draw them into their place with considerable force—enough to lacerate the thumbs of the surgeon, unless they have been well guarded against such an accident.

Sir Astley Cooper placed the patient in a recumbent posture, placed two corks between his molar teeth, and elevated the jaw.

Efforts at reduction may be confined to one side, if one only be dislocated.

In order to prevent a redisplacement, the jaw should be supported for several days, by bandages similar to those employed for fracture of the lower jaw, and the patient should be warned against opening his mouth more than absolutely necessary for the reception of soft food.

CHAPTER XVI.

PARTICULAR AFFECTIONS OF THE MOUTH AND ADJACENT PARTS.

Diseases of the Gums.

Of inflammation of the gums I have already treated, in considering the general subject of inflammation. They are liable to other disorders which are worthy of notice. Among these are tumors, termed epulis* and parulis.† These tumors differ entirely in character. The parulis is an abscess, the result of suppurative inflammation; the epulis a true tumor or morbid growth, seated upon and involving the structure of the gum. Parulis is therefore a distension of the parts by injected blood

* Epulis—επι—upon, ουλον—the gum.
† Parulis—παρα—near, ουλον—the gum.

and effused matter; parulis is an addition of organized but unhealthy substance, increasing the solid bulk of the parts.

The term epulis is applied to different excrescences seated upon the gum. Some are hard, even scirrhous; others soft and spongy. Some are developed in the gum itself, others have their seat in the membranes of the teeth, periostea, or in the dense structures of the bones.

Of course, as they differ in character and seat, they can have no uniformity as to the inconvenience and danger attending them. They are generally caused by carious teeth, whose fangs keep up a continual irritation in the neighboring parts, and are sometimes traceable to neglected *parulis* or gum boil as their immediate cause.

The most common form of epulis is that of a soft, red, spongy mass, which bleeds readily, but is not attended with much pain, as it is not very sensitive. It is liable to be reproduced after removal, but, unless improperly treated, is not dangerous. Sometimes, instead of appearing externally, the disease commences in the sockets of the teeth, and loosens and displaces them, though they may be perfectly sound. Some swelling of the gums and a discharge of pus accompanies this condition.

A smooth, shining, elastic tumor sometimes shows itself upon the gum. It is compressible, but little sensitive, and bleeds freely if cut into. It is not malignant.

A scirrhus may be located in the gum, where it will exhibit its distinctive qualities, hardness, acute lancinating pain, and unequal surface. It follows the history of similar tumors elsewhere, and is much to be dreaded.

Another form of carcinomatous affection of the gums is that of a soft, spongy, bleeding fungus, much like the first form of epulis, but accompanied with great sensitiveness and acute pain.

When these affections, either in their natural progress or from ill treatment or injury, assume a rapidly progressive form, very terrible phenomena begin to manifest themselves. If previously hard they soften, the bones become carious, a fetid and sanious discharge is poured out, the teeth are loosened, the devastation

spreads, the lymphatics swell, hectic supervenes, and after much severe suffering the patient expires, from nervous exhaustion, hemorrhage or suffocation.

When the tumor is of the non-malignant kind, and has not so far progressed as to involve a large mass of bone in caries, and soft parts in ulceration, it may readily be removed, and its return prevented, by the removal of the carious teeth which cause it, if, as is generally the case, it has been induced by this cause. Without removing these irritants, of course no permanent cure can be expected.

When of the malignant variety, the most prompt and decided means must be resorted to, to prevent fatal consequences.

Mr. Liston and Prof. Mütter both regard genuine cancer of the gums as a very rare disease; but they concur in thinking that such affections are degenerations from original character, owing to constitutional causes, neglect or bad treatment. There is, therefore, more encouragement to hope for success in the attempts made to remove these affections, than when they are but the local indications of general disorder.

The treatment will of course be modified by circumstances. If the disease be not malignant, but is evidently a mere fungous condition of the gums, depending upon the irritation of a carious tooth, &c., it is only necessary to remove the cause of the trouble, and then to cut away the tumor, and destroy what may remain of it by compression or caustic.

If the tumor be of the elastic kind, it must be thoroughly removed. If it hang by a narrow neck, it may be cut off by a ligature. Profuse bleeding is apt to result from incising these tumors, and will generally demand the use of the actual cautery for its suppression.

The scirrhous or malignant tumor requires a very thorough exsection. Every tooth and all the bony structures in any way connected with it must be boldly cut away, and the wound seared with the hot iron.

The mode of operation preferred by Prof. Mütter, and which he thinks "better adapted to the case," and fraught with less

suffering than the use of the mallet and chisel, is thus described by himself.*

"Having placed the head of the patient in a good light, and against the chest of an assistant, who stands behind the operating chair, the surgeon makes a perpendicular incision on each side of the tumor, with a pair of strong scissors, or rather cutting forceps, and without stopping to arrest the hemorrhage, at once detaches the mass, by dividing the alveolar process *above* or *below* the tumor, as the upper or lower jaw happens to be involved, with cutting forceps, one blade of which is applied to the inner portion of the jaw, and the other to the outer. The raw surface is next carefully examined, and every vestige of the disease removed with a knife or scissors. If the bone appears affected, it must be cut away, and often a very good preventive to the return of the disease is the use of the actual cautery. The bleeding may be arrested, either by the cautery, or by placing a pledget of lint, dipped in creosote, in the chasm, over which a slice of cork may be laid, and then closing the jaws, make the sound one act as a compress. To secure the dressing, the bandage for fracture of the lower jaw may be applied. The parts should not be examined in the first twenty-four hours; but after this period a daily dressing is required, the nature of which depends on circumstances. If there be no disposition to a return of the disease, it will be sufficient to wash the part with some detergent solution, until cicatrization is completed. But if fungous granulations make their appearance, the vegetable caustic, (caustic potassa,) or actual cautery, should be applied, until this disposition in the wound is destroyed.

"Instead of using the perpendicular cuts with the short forceps, some prefer a thin saw, but the method just described is less painful, and accomplishes the object in a much shorter period. When the tumor is very large, the saw may be required, and should be always at hand, in case the edges of the forceps should turn in making the first cut.

* Liston and Mütter's Surgery, p. 285.

"When the tumor is very large, or seated in the side of the bone, or far back, the cheek should be divided, in order to enable us to reach it without difficulty. In such cases I have found great advantage in using a cutting forceps, so curved as to pass readily to the back part of the mouth, and then allow of the blades being passed above the base of the tumor, when the upper jaw is affected, and below it, when the inferior maxillary is the seat of the disease.

"After the removal of the diseased mass, the wound of the cheek may be closed, and union by the first intention attempted; and when the dressings are carefully attended to, the deformity resulting from the incision is scarcely perceptible, unless the portio dura is extensively injured, when paralysis, generally incurable, ensues, often giving rise to a very unpleasant expression of countenance."

Of whatever kind these tumors may be, they should be carefully watched. So long as they cause no inconvenience, they may be let alone, but if, by reason of growth or any other cause, they begin to inflame the surrounding parts, or to become painful during the movements of the jaw or contact with air or food, they should be extirpated. If pendulous and accessible, a ligature or the knife may be used; but if broadly based and fully incorporated with the gum, and but small in size, caustic should be used.

A number of cases have been collected by Jourdain, and published in his celebrated work on the diseases of the mouth, which show the serious character often assumed by epules. In truth, all forms of tumors may appear upon the gum, and the only difference to be observed in their treatment in this location, grows out of the impossibility of using applications and appliances which are found useful and convenient elsewhere. So far as tumors of the gums are concerned, the treatment is very limited indeed. If they contain matter, they must be opened; if connected with carious teeth, these must be removed; if with carious alveoli or maxillary bones, the treatment must be directed to the deep seated cause; if they are malignant, or if in any way inconvenient, they must be removed, either by cautery, ligature or incision, as the nature of the case may require.

Parulis.—Abscess of the gum is so called. It is precisely similar to such tumors in other soft parts, and generally, if not always, depends upon carious teeth.

Sometimes the abscess makes its appearance without preceding pain, over the fang of a diseased tooth, and after remaining for some time will gradually disappear, the matter it contains having been absorbed, or having found vent through an opening in the tooth. More commonly, however, the abscess succeeds a violent and protracted tooth-ache, which is the consequence of cold acting upon the irritable nerves of carious teeth and bad conditioned gums. The pain is sometimes very severe, but at all times there is an aching or throbbing sensation, due to the inflamed state of the gum tissue. Sometimes several days and nights of severe suffering will elapse before the abscess is seen to elevate itself from the gum: at other times it will be formed in a few hours. When first perceived, it is a hard circumscribed elevation, either immediately upon the gum or in the cellular tissue between the gum and cheek. After a longer or shorter time, the tumor softens, the pain abates, and fluctuation is perceived in the tumor. If no artificial means be employed to evacuate the matter, an opening will be made and the matter discharged. Sometimes, though very rarely, ulceration will perforate the cheek, and the pus be evacuated on the outside. This is an accident much to be deplored, and therefore, as soon as fluctuation is perceived between the gum and cheek, the pus should be evacuated.

During the inflammatory stage of the tumor, before pus is formed, little can be done except to apply leeches to it. This, if applied very early, will sometimes prevent suppuration, and more often limit its extent. After the tumor is fully formed, however, leeching will do no good. We can only soothe the patient by keeping the face warm, applying counter irritants to the cheek, and prescribing anodynes. Unless the diseased tooth be removed, the abscess will be formed again upon the slightest provocation.

Generally, after the evacuation of the pus, the abscess is filled with granulations, and the parts return to their natural state.

Sometimes, however, the tumor is due to slow suppuration of the fang or alveolus, and in this case the matter continues to trickle through the opening, the edges of which become thickened and hard, and a fistula is formed.

Of course, the only remedy is to remove the diseased tooth or bone.

It not unfrequently happens that abscesses are formed at the roots of teeth which appear sound, and after much pain endured by the patient, fistulous openings evacuate the matter which should have been discharged by extracting the tooth or teeth whose obscure disease produced and perpetuated the trouble. In illustration of this important fact, I will quote some cases reported by Jourdain.

"The late Mr. Desjardins, surgeon, requested me to visit with him M. Rosé, Place de Greve.

"This patient had been suffering for many days such violent pain along the whole extent of his chin, as to prevent him from sleeping at night or pursuing his business by day. As no disease could be discovered in his teeth, and as they were not at all subject to ache from cold or heat, they were not suspected to cause the suffering. The patient was bled, but without effect, and the pain becoming excessive, I was called in. I first examined the lower incisors, but could discover no signs of disease. The other teeth also appeared sound. The lower part of the gums of the incisors appeared slightly reddened, but without swelling or fluctuation. A little purple exanthema upon the right gum was the only additional alteration that we could perceive, and this was not sufficient to determine the extraction of the tooth.

"Thus uncertain how to act, I applied a lighted taper to these two teeth. From the reflection of the light, we satisfied ourselves that the incisor tooth nearest to the canine was the cause of all the suffering. The enamel substance seemed to have lost its usual transparency. Finally, to be more certain, I pierced the exanthema, and serous blood flowed out. The stilet pierced the bone and struck the root of the tooth, which I extracted. We immediately broke it. The canal of the root and the pulp-cavity were filled with a black and very fetid pus.

"Upon the same day, the patient became entirely easy, and in a few days no appearance of disease remained."

"*Fistula of the Gum of the Lower Maxillary, having an Exterior Opening at the Hollow of the Chin.*

"M. A. Petit called me to see the wife of M. Despinasse, whom he had been treating for a long time for a fistula of the gum, situated at the lower part of the gums of the two central incisors of the lower jaw, and which had an external opening upon the fossa of the chin. The teeth were neither loose nor altered in color.

"The patient could give no reason for the occurrence of the disease. She looked very well, and was yet young. The ulcer gave us no clue to the cause of it. The condition of the teeth made us hesitate to extract them from the mouth of so young a woman, and the same reason had hitherto prevented such an operation.

"Various caustics had been introduced into the external opening. In short, with the exception of the actual cautery, no means had been left untried to heal the fistula. The opening of the gum had indeed cicatrized, but that of the chin had proved intractable.

"Upon exploring the outer opening, I found that the probe penetrated the base of the alveolar and maxillary substance, and that these bones were traversed by little canals corresponding to the roots of the two teeth. Hence, considering the length of time that the disease had resisted all remedies, I strongly suspected that the alveolar extremities of these roots were carious. I imparted my suspicion to M. Petit, who agreed with me that the teeth should be extracted. When the teeth were drawn, I examined them. The extremities of their roots were black and corroded; the canal was in the same condition, and the pulp-cavity contained thick and fetid pus. Suitable treatment was now addressed to the carious bones, and the fistulas soon were healed."

Spongy or Fungoid Inflammation of the Gums.

This affection is commonly called scurvy, but improperly so, as we have already observed.

The gums, when thus affected, are darker than usual, swollen and less firm than when in health. They bleed freely under the brush, or when touched by the lancet, and upon pressure, discharge a very fetid pus, which often gives its disgusting odor to the breath.

The gums are generally detached to some extent from the teeth, and their margins are thickened. They are often very sensitive.

The extent of the disease, and the inconveniences attending it, vary very much. Sometimes it is confined to a very small portion of the gum, being a mere local attendant upon some diseased or irregular tooth, at other times it seems to depend upon constitutional causes, and communicates itself rapidly to the whole gum structures of the mouth.

When thus extensive, it develops disease in the periosteum of the teeth, causes bone to be deposited in the sockets, spreads carious devastation along the whole circle of the jaws, and despoils the mouth, either by causing the teeth to be pushed from their sockets, or by destroying the crowns by devastating caries.

In the meanwhile the general health suffers. The fluids of the mouth are no longer fit to perform their office; the teeth cannot masticate the food; fetid pus and blood trickle into the stomach, and the patient's nervous system is worn out by frequent paroxysms of tooth-ache.

Though certain aptitudes of constitution give virulence to this affection, it is mainly a local disorder, originating from the presence of decayed teeth and tartar. The latter, gradually detaching the gum from the teeth, produces inflammation and ulceration of the gum, and accumulating under the opening, constantly increases the irritation.

Dr. Harris mentions a form of this disease met with in persons of scrofulous habits, which he thinks differs essentially

from the more common affection. In this case, "the gums, instead of being purple and swollen, are paler and harder than ordinary, and on being pressed exude a muco-purulent matter of a dingy white color. They often remain in this condition for years, without appearing to suffer any loss of substance, or to affect the alveolar processes. This variety of disease of the gums is principally confined to persons who have very white teeth, and is much less likely to affect males than females. It rarely occurs before the age of eighteen or twenty, and though unquestionably the result of inflammation, yet the gums exhibit no inflammatory symptoms, but on the contrary are paler, less sensible, and possessed of less warmth than usual. It is never attended with tumefaction of the gums, and by absorption only in its advanced stages. Its effects are the most simple and innocent of any form of disease to which the gums are liable, but its cure is generally more difficult."

The treatment of the common form of the affection is simple and generally successful, yet it is often comprehensive. Every irritant to the gum, whether tartar or teeth, must be thoroughly removed. This remark applies not only to diseased but even to irregular teeth, and to those which have no antagonists. This work of purgation of the mouth being thoroughly done, simple astringent washes will do all that is further necessary.

The scrofulous form of the disorder described by Dr. Harris, demands entirely different management. Being but a phenomenon of general constitutional vitiation, it can hardly be permanently relieved by local treatment. Constitutional remedies, such as proper diet, exercise, air and clothing, iodine and cod liver oil, should be prescribed. At the same time, the edges of the gum should be touched with lunar caustic, (nitrate of silver,) which not only acts as an escharotic by removing the diseased surface, but exerts a singularly modifying influence upon certain forms of inflammation.

Hemorrhage from the Gums.

The gums, like other mucous structures, are sometimes so

engorged with blood, that it is exuded freely upon the surface, constituting *passive* hemorrhage. The pathological condition attending this sort of bleeding is very different from that which is manifested by *active* hemorrhage. In the former case, the exudation of blood is caused by the weakness of the containing tissues; in the latter, by the violence of vascular action. To relieve the one, we endeavor to fortify the parts by astringents, &c.; in the other, to lessen the arterial force by which the blood is injected into the distended vessels. Hemorrhage of either kind may be due to a rupture of a vessel. This, however, is not necessary to hemorrhage, even when profuse. It is much more apt to be the case in active than in passive bleeding.

The hemorrhage from the gums is always *passive*. Even when the tissues are the seat of violent inflammation, they do not bleed, but when they are softened and rendered less resisting by local or constitutional causes, they sometimes permit the blood to exude through them to an alarming amount.

When the mucous membrane of the gums is thus hemorrhagic, the condition is shared by the membrane covering other parts of the mouth.

I have seen this affection as one of the phenomena attending exhaustion from intemperance.

Occasionally persons are met with, who manifest the hemorrhagic diathesis as an organic idiosyncrasy. In such cases all wounds are exceedingly dangerous, as the blood has too little coagulability to form a plug to any divided vessel. Instances have occurred, in which persons thus conditioned have bled to death from the rupture of trifling vessels in the extraction of a tooth.

When passive hemorrhage occurs from the gums, astringents generally fail to check it. Indeed it is almost impossible to apply them effectually to every part of the bleeding surface.

We have, however, a very available remedy in compression, which can be speedily and easily applied, by filling a wax-holder, such as is employed for taking impressions of the mouth, with wax, previously softened in warm water, and then applying it in such a manner as completely to imbed the teeth and

gums in it. This method, recommended by Dr. O. Holmes, I have seen tried successfully in a very obstinate and dangerous case.

When troublesome bleeding results from the extraction of a tooth, it may be checked by the actual cautery, or by plugging the tooth with a cone of waxed cloth or cork.

The nitrate of silver will commonly arrest the hemorrhage promptly; but it cannot be safely applied over a very large extent of the mouth at once.

CHAPTER XVII.

DISEASES OF THE LIPS.

Hare-Lip.

This is a congenital deformity, which consists in a fissure which divides the lip perpendicularly. Sometimes there are two fissures: the former is single, the latter double hare-lip.

The cause of the deformity is unknown. It is a failure of nature, through an inscrutable cause, to complete the union of the two sides of the body at this part of the line of junction.

Sometimes the affection exhibits a single slit, at others two, with a lobe or flap between them; and sometimes the fissure extends along the roof of the mouth, the soft and hard palate being separated. Generally the lip on both sides of the fissure is not adherent to the alveolus, but sometimes it is.

Most commonly the upper lip only is affected, but sometimes the lower is the seat of the fissure. When this is the case, the child cannot suck, or learn to speak with any distinctness; adults suffer from the loss of the saliva, which runs freely from the mouth, and indigestion is the consequence. This form of hare-lip is seldom congenital, but is occasionally traumatic* or accidental.

*Traumatic—the effect of a wound.

All degrees of hare-lip are attended with deformity and inconvenience, though some, from the extent of the separation of parts, are much more annoying and unsightly than others. Mr. Cooper describes a form of it, which must, however, be rare, in which "the jaw is not only imperfectly ossified in front, so that a cleft presents itself there, but one side of it projects forward, and is at the same time inclined too much outward, drawing with it the corresponding part of the palate and the septum nasi, so that a very unsightly distortion of the nostril and nose is produced."

When the fissure pervades the palate, the patient finds it very difficult to masticate or swallow, and articulation is necessarily very imperfect.

It is obvious that surgical aid must be employed for the remedy of the deformity.

A considerable difference of opinion exists among eminent surgeons as to the proper time for performing the operation—some advising to delay it until the child shall be four or five years old, and others preferring to operate upon the infant of months.

Sir Astley Cooper used to narrate several cases in which a fatal termination resulted from too early an operation—convulsions having occurred from the pain and irritation of the wound.

Undoubtedly, infants may often be operated upon with more facility than older children, and in some instances the deformity is attended with so much inconvenience as to authorize early operations. If, however, the child be able to nurse, and especially if it exhibit considerable nervous mobility, it will be better to delay the operation for several years.

Mr. Liston advises to defer the operation until the first dentition shall have been completed. He says, "when the operation is undertaken at an earlier period, there is often great difficulty. Sometimes union does not take place, the parts turn out again, and the patient is rendered more deformed than in the first instance. When the features are enlarged somewhat, you have more ground to work upon; you can put the parts neatly together, and you can almost answer positively for the union taking place."

The cure depends upon the capability of two incised surfaces to unite when brought into contact, and the proper performance of the operation consists in cutting off the edges of the fissure, and keeping the new surfaces so closely together as to procure union by the first intention.

The manner of performing the operation is sufficiently simple, yet it requires considerable dexterity to do it well.

Some surgeons cut off the edges with a pair of strong sharp scissors; others place a piece of wood under the lip, and then pare off the edges with a knife; others, confident in the correctness of their eye and the steadiness of their hand, place the child between their knees, with the head towards them, enter the knife into the lip above the angle of the fissure, and carry it downwards until it completes the removal of all the portion of the lip on that side which is required. A similar cut upon the other side prepares the wound for closure.

The bleeding readily stops upon pressure of the lips, and is rarely excessive.

The wound is closed by the *twisted suture;* that is, two silver pins, with steel points, are introduced through the edges of the wound, penetrating the lip through about two-thirds of its thickness, the first near the inferior extremity of the wound, and the second a quarter of an inch above. The divided surfaces being thus brought into contact, thread is wound repeatedly around the pins, first transversely and then obliquely, from the right side of the upper to the left of the lower, and *vice versa*, until the contact is firmly secured. The points of the pins should then be unscrewed, and a dossil of lint placed under each end of them. The pins should be somewhat curved and flattened.

Different bandages have been devised for the purpose of supporting the pins and preventing the separation of the adapted surfaces. That recommended by Mr. S. Cooper is used as follows: A close strong night-cap is provided, with a piece of broad tape attached to the back part of it, and with two ends of sufficient and equal length. A compress is then to be laid over one cheek, and fitted by bringing one portion of the tape

forward over it, which is to be fastened to the cap on the opposite side of the head. The other compress is then to be applied and fixed in a similar manner. Lastly, a bandage is to be put under the chin, and brought over each compress up to the top of the head, where the ends of it are to be fastened to the cap. During all these proceedings, until the compresses are well secured, the assistant must support them steadily with his hands. Lastly, the bandage, compresses and cap should all be securely stitched together.

The cut through the lip must be as straight and clear as possible, and the operator need not fear to take sufficient of the edge to ensure such a surface as will be well coapted.

When the hare-lip is double, the older surgeons advised to perform the operation on one side and then upon the other, but this is unnecessary. The edges may be prepared at once, and the needles pushed entirely across through the intermediate flap. Sometimes a piece of bone projects and pushes out the flap. If so, the bony projection must be either reduced by compression or cut off. It is always important to save the alveolus, and it appears from the practice of Desault and Mr. Dunn, that it is seldom necessary to remove it.

There is often a deficiency of bone, which will cause deformity after the hare-lip has been successfully treated.

Very often, when the fissure extends along the palate, it will be approximated after the closure of the lip; but this is not always the case, and articulation and mastication continue to be very much interfered with by this unfortunate cleft of the palate.

The dentist can often remedy this serious deformity, by nicely adapting a gold plate, so as to form a solid artificial palate, which will tolerably well supply the want of the natural one; and this may be considered the most available means of relief at our disposal.

Operations have frequently been performed for the cure of this palatine fissure, and sometimes have succeeded. The operation, however, is difficult, very painful, considerably dangerous, and very uncertain, and should never be performed except

by a dexterous and experienced surgeon, and under circumstances in which no artificial means could be used to cover the cleft. The design of the operation is precisely the same as in the case of that for hare-lip, viz. to cut off the edges of the fissure and unite them by sutures so as to procure union.

I will describe this operation in a subsequent chapter.

The lips being very vascular, abundantly supplied with muscles, mucous glands and nerves, are liable to become the seat of ulcers and tumors of various kinds. In the male, carcinoma of the lip is perhaps more frequently met with than it is in any other part of the body.

It is not necessary to particularize these affections, nor to give a detailed account of their phenomena and treatment. They must of course be managed as similar conditions elsewhere, the treatment being modified to suit the exigencies of the particular case, and the peculiarities of the location. All operations upon these organs must be conducted with great carefulness and nicety, on account of their sensitiveness and vascularity, and of the deformity and serious inconvenience attending any permanent alteration of their relations or structure. Of these, *adhesion to the gums* and *contraction of the lips* are the most common and most serious.

Adhesion is the result of acute inflammation of the surface membrane of the lip and gum, in the course of which plastic lymph is thrown out, and becoming organized, forms a permanent bond of union between the parts. In all cases of abrasion of these surfaces, or of long continued inflammation, care should be taken to prevent this accident. It can rarely happen, unless the parts thus prepared to unite be pressed together by a bandage or some similar mechanical application.

I have seen it, however, result from salivation of a very severe grade. The cheek, from its less mobility, is more liable to this accident than the lips.

Contraction of the mouth may result from a burn, as may also adhesion of the lips to the gums.

When so serious a deformity has occurred, it can only be remedied by an ingenious operation, which, though very pain-

ful, is generally endured with cheerfulness, so terrible is the sense of deformity to most persons, especially to females.

A few cases will be sufficient to show what has been, and what may be done, in unfortunate cases of this kind, and will furnish to the ready mind a number of valuable suggestions.

Simple dilatation of the mouth will be unsuccessful, and incision at the commissures will be ineffectual in permanently enlarging the orifice, on account of the impracticability of preventing reunion between the severed portions of the skin.

In order to obviate this difficulty, the celebrated Dieffenbach, who has deservedly obtained a world-wide reputation for his success in rhino-plastic* surgery, suggested that a strip of mucous membrane should be folded over the edge of the incision. This fortunate thought has led to a number of brilliant and successful operations for the cure of this class of deformities. The following cases are specimens:

M. H., aged twenty-two, admitted to the hospital under Mr. Liston. About a year before, she was knocked down in a brawl, and a man jumped upon her, lacerating and bruising her cheek and mouth very extensively, and fracturing her jaw. She went to St. Thomas Hospital, where her jaw was put up and bandaged. These were not removed for some time, and when taken off, the wound on the right side of the mouth was found to be healed, and the cicatrix considerably contracted. Since then the contraction has continued somewhat, and now the mouth is so small that she can scarcely get any solid food to pass her lips. There is a large and dense white cicatrix on the right side of the mouth, rather sharp and puckered toward the angle.

Mr. Liston removed a triangular portion of the cicatrix on the right side of the mouth, dissecting it off the mucous membrane, which was then divided to the extent of the external wound. Lint, dipped in cold water, was then laid over the

* Rhino-plastic—literally, *nose making*. A term first applied to the operation for making a substitute for a lost nose, but now applied to all operations for restoring lost parts.

surface, to suppress the oozing of blood, which was by no means considerable. About five hours after the operation, all oozing having ceased, the mucous membrane was turned over the cut edge of the cicatrix, and united by three or four points of suture to the skin of the cheek; by this means, a mucous surface was secured to the newly formed prolabium, and the gradual cicatrization and consequent contraction avoided. On the day after the operation, there was a little swelling around the wound, not much pain, and in ten days afterwards the patient was discharged much relieved.

Case II.—The daughter of a highly respectable physician, when she was eleven years old, was accidentally thrust against a heated stove, and her hands, arms, neck and the lower part of her face severely burned.

In spite of all the judicious means employed by the father, the wounds about the mouth healed with so much contraction that the opening into that cavity was almost obliterated. Her father then endeavored to distend the mouth by tents, but these accomplished nothing. He then endeavored to enlarge the orifice, by making a horizontal incision from each angle of the mouth, and preventing the surfaces from uniting, by the interposition of tents; but this expedient failed also.

The patient was then brought to Dr. Mütter, who says: "When I first saw her, nearly a year had elapsed since the occurrence of the accident. Her appearance at this time was very singular. Firm and dense cicatrices nearly surrounded the mouth, but were most marked on the lower lip and about the angles; while the orifice of this cavity was barely large enough to admit the point of the finger, and presented an oval form. The cicatrices of the incision made by her father were also very apparent at each angle. The general health was good."

Dr. Mütter performed upon this young lady the operation as proposed by Dieffenbach.

"The patient was seated in a low chair, with her head supported by her father, and exposed to a good light. I then introduced the extremity of the fore-finger of my left hand into the mouth, and placed it under the left labial angle, which by

this means was rendered prominent and sufficiently firm to permit the second step of the operation to be readily executed.

"This is accomplished by the introduction of one blade of a pair of narrow straight scissors into the substance of the cheek, between the mucous membrane and the other tissues, and a little above the commissure. The blade is then slowly pushed from before backwards, separating, as it passes along, the mucous membrane from the muscles and integuments, until its point reaches the spot at which we wish to locate the new angle of the lips. The blades are then closed, and the parts included between them cut squarely and smoothly at a single stroke. The first incision being completed, the scissors were withdrawn, and a second one, parallel and similar to the first, made in the lower lip, the distance between the two being about three lines. These incisions were then united at their posterior termination by a small crescentic section.

"By these cuts it is evident that a small strip of muscle and integument was insulated from the surrounding parts, and it only remained to separate it from the buccal mucous membrane, which was easily done by a single stroke of the scissors.

"The second step of the operation being thus finished on the left side, similar incisions were performed on the right.

"The next steps of the operation, and by far the most difficult of the whole, were the division into equal portions, of the mucous membrane, the eversion of the flaps, and their attachment tc the edges of the incisions just made, as well as to the red pellicle of each margin of the lips.

"To divide the mucous membrane equally, I separated the jaws of the child as much as possible, by which measure the membrane was put upon the stretch, and kept sufficiently firm to bear the operation of the scissors. The incisions in the membrane did not extend as far as those made in the muscles and skin, but stopped short about three lines from the union of the latter. This was done in order to make the outer portion of this tissue adapt itself accurately to the new commissure. The flaps were then brought out, reflected over the margins of the wounds, and firmly attached to them by means of the twisted

suture, the needles used being very short and fine. The membrane must be first attached to the commissure, by which measure we secure the proper adaptation of the flaps to the other parts.

"Every thing being thus properly adjusted, a common roller bandage was applied, as in cases of fracture of the lower jaw, in order to prevent any derangement of the wounds. The patient was then placed in bed, with her head elevated, and as she had, just before the operation, eaten freely of some light food, ordered to take no nourishment of any kind until the next visit, and to be perfectly silent."

Four days after the operation the bandage was removed, and the Dr. proceeds: "The sutures, which had been closely bound down to the parts by blood, were carefully softened with warm water and cut away. As soon as they were removed, the most gratifying exhibition of the success of the operation was afforded. On both sides, union between the everted mucous membrane and the margins of the wounds had taken place nearly throughout, and the new lips presented an appearance almost natural. Some of the needles were then removed, but as there appeared to be a feebleness in the adhesions at some points, the needles passing through them were allowed to remain, and a thread cast loosely around them. The bandage around the head was also reapplied.

"Nothing remarkable occurred in the subsequent treatment. The dressings were taken off in eighteen days. The mouth presented a very good appearance, though the lips were somewhat thinner than natural, and there was some difficulty in bringing them into close contact, especially at the central portions. I have no doubt, however, but that this defect will soon disappear."

An operation of a similar kind, but much more difficult, performed by Dr. Hullihen, will be described in a subsequent chapter.

CHAPTER XVIII.

DISEASES OF THE GLANDS AND GLAND-DUCTS.

Salivary Tumors.

*Ranula.**—This is the name given to a tumor under the tongue, which is caused by obstruction of the ducts of the sublingual gland, and the detention of secretion which consequently results.

This swelling is not usually very large, though sufficiently so to cause great inconvenience; but occasionally it has been observed of an enormous size. Le Clerc mentions a case in which the tumor filled the whole mouth, and pushed forward the teeth of both jaws. The patient was nearly suffocated, and must have died had he not been relieved by an operation.

The case related by Boinet to the French Academy, was even worse. The swelling not only filled the whole mouth, but projected out of it for a considerable distance. The two upper incisor teeth on the left side, were lodged in a depression observable there, and the canine teeth of the same side, forced outwards by the mass of the disease, had pierced the lip near the commissure. A fluid, resembling mucus, flowed from a narrow aperture at the lower part of the swelling. The tongue could not be seen, so much was it pushed backwards, and for some time the patient had subsisted only upon liquid food, which he was first obliged to convey to the back of his throat by some mechanical contrivance. The four incisor teeth, two canines and first molars of the lower jaw had been pushed out of their sockets by the pressure of the swelling. The patient's aspect was alarming, and he was threatened with suffocation.

Extirpation was thought necessary, and it was performed with all due caution. The large cavity thus occasioned was filled with lint. The lower jaw being diseased, Boinet scraped

* Rana—a frog; so called from a fancied resemblance.

some of its surface off, and covered the places with lint, either dry or dipped in spirit of wine. Some exfoliations followed, and the fungous granulations which grew, were suppressed with proper applications. In three months the cure was completed.*

Ranula may readily be detected. It presents itself in the form of a rounded or oval, soft, semi-transparent tumor, on one or both sides of the frenum linguæ. It is not painful, and occasions little inconvenience until its volume becomes sufficiently great to interfere with the movements of the tongue.

Nevertheless, encysted tumors of various kinds do sometimes occur in this locality, and have frequently been mistaken for ranula.

Simply to open the tumor and let out the fluid contents, will not cure the disease, inasmuch as the obstruction of the ducts will continue. It becomes necessary, therefore, to reopen these, or, if this cannot be done, to make an artificial opening, which may permit the secretion of the gland to escape.

Lewis advised the introduction of small leaden stilets to dilate the canal, and permitting them to remain for a day or two at a time. Dr. Physic and others preferred the passage of a thread through the tumor, which was permitted to remain as a seton. Dr. Reese considers this plan infallible, or nearly so.

The method pursued by Lewis, and followed by Dr. Mütter, is to make an oval or round incision, and then to touch the margin with nitrate of silver, so as to create an artificial fistula.

Sometimes all other means fail, and it is necessary to dissect out the whole tumid mass.

The salivary glands are sometimes the seat of tumors of a more formidable character. Being enclosed, the sublingual gland especially, by the muscles of the throat and tongue, these tumors, even if suppuration takes place, cannot commonly be relieved by the discharge of the contained matter. The sac may be repeatedly punctured without relief, for the fluid continues to form, and repeated wounds result in thickening and enlargement of the gland, and finally a solid tumor is formed, which may go on to enlarge until it may cause suffocation.

* Cooper's Surg. Dict.—Art. Ranula.

The case of Margaret Murray, so graphically related by Mr. John Bell, should warn us against trifling with even apparently trivial tumors of these parts, and dentists, as they may be the first to observe, should be prepared to distinguish these swellings, and advise that prompt and decided treatment which is so important in these cases. In the case of Margaret Murray, the tumor was as large as the patient's head, and threatened imminent suffocation. In fact, the poor woman lived in a state of semi-strangulation. When upon the verge of gangrene, the tumor, which was hard upon the surface but fluctuating beneath, was transfixed with a trocar. About two pounds of thick ropy matter was discharged. It was hoped that this discharge would afford relief; but, as Mr. Bell very justly observes, those who indulged such an expectation did not recollect that to produce a secretion so profuse, a great mass of vascular substance is required, and the consequence of permitting a gelatinous collection of matter to attain to such a size is, that the vessels by which it is secreted, not being, as in a case of suppuration, ulcerated or destroyed, the basis, consisting of these vessels, is consolidated into a tumor. The sac may be emptied, but the nucleus to the sac cannot be discussed, but hardens and inflames pari passu with the evacuations.

In the case of this poor woman, though the salivary matter continued to run, thin and pellucid, through the opening, the tumor did not diminish. "She lay reclined, always struggling for breath, and sometimes attacked with violent asthmatic paroxysms; the jaws almost entirely closed, the mouth continually open; the nostrils dilated, and the stupor, which such difficulty of breathing causes, increasing every moment; and her swallowing being equally difficult with her breathing, she expired in the fourth week."

Although tumors of this kind may contain thin matter, a mere puncture is not sufficient for their relief. A free incision must be made, laying open the diseased gland, and the treatment directed to the permanent adhesion of the walls of the sac. The sooner this is done the better.

Tumors of the Submaxillary Gland.

This gland is very subject to inflammatory swellings, which frequently become indolent, and remain for a long time without causing inconvenience. Occasionally, however, it is the seat of very dangerous and even fatal tumors.

Mr. John Bell records the case of "Jenny Brown, a poor solitary thing, who worked laboriously to maintain her aged mother, her father being for some years dead. She slaved at all kinds of work, as an out-servant in a farm yard. After churning milk, being exceedingly heated, she went out with her cap loose and her jaws exposed, and by carrying bundles of wet grass for the cows upon her head, had a severe tooth-ache, for which a tooth was pulled; and still continuing in the same labor, she got cold. Thence arose a kernel-like swelling of a gland under the lower jaw, near the gum of the corrupted tooth. Her face was swelled so that her eyes were closed; the lump grew as big as a hen's egg, with severe pain; the swelling of the face subsided, the pain ceased, but the glandular tumor remained. Such was the slight beginning of the disease." The tumor, however, continued to enlarge until it became necessary to extirpate it. This was attempted in an awkward and irresolute way, and abandoned in the midst of the operation. "One advantage this poor creature derived from this unsuccessful operation, viz. the relief from pain, for she was relieved by the loss of blood, insomuch that she recovered her health, and in some degree her strength, and returned to work for the support of her old mother: at least she could spin. For a long time she has been unequal even to this. She has lingered and wasted in a very helpless condition, and is now in a state of extreme weakness from want of food. She walks but a few paces without stopping for want of breath; her swallowing is difficult; she has great pain, night and day, from the mere distension and size of the tumor. The weight of it is intolerable, and it appears to me that in not many weeks she must be relieved from her sufferings."

The suffering of the patient seemed to be occasioned by the great bulk of the tumor pressing upon the trachea, and even the breast, and embarrassing respiration. The tumor had every character of what is usually called a wen; the whole mass incredibly heavy in proportion to its bulk, so that she supported it continually with a sling round the head and neck. It was extremely firm, not very vascular throughout its substance, but receiving its arteries at particular points. It had no great veins running over its surface, whence Mr. Bell presumed that it had nothing of a cancerous character or irritated circulation.

Mr. Bell wished to operate, but was over-ruled.

Some remarks of Mr. Bell, in lecturing upon these subjects, are so judicious, that I cannot refrain from quoting his language at some length.

"But it is not the discussing of interesting doubts and questions of life and death, nor the performing operations within the limits of possible success or possible safety, that constitute the chief occupation of one engaged in practice. The more homely talent of distinguishing the various aspects and characters of tumors, and treating them judiciously, is far more desirable to acquire; and, indeed, there is a very perplexing variety of tumors within the mouth and around the jaws, which one learns to distinguish only by referring their various aspects to corresponding peculiarities in the structure of the parts. The tumors which I have just described are of a very malignant character, and I confess I know not whether to refer them to the salivary or the lymphatic glands; to the latter, rather, I believe. This, for example, of Mr. M., though it looks like a tumor of the submaxillary gland, which holds imbedded, I may say, in its substance, the facial artery, it could not have been extirpated without dividing that artery. The submaxillary gland is divided into two masses, and the trunk of this artery is received into the recess or cleft. The artery seems to twist round the gland, and I have, both in extirpating the submaxillary gland and in assisting at such operations, recognized it by this mark.

"The following case, if not full of interesting particulars, is at least accompanied with useful rules, and I transcribe them from my case-book, with those reflections which arose in my mind when forming my opinion and preparing for the operation, as I have ever done, with a scrupulous and conscientious desire to foresee every eventual danger, and recollect every circumstance, anatomical or pathological, which might contribute to my patient's good; the reflections, you will perceive, have a mutual relation to the instruction of my pupils and my own improvement.

"It is the case of a young lady, who came from a very great distance, urged by her own fears and the persuasion of her surgeon.

"First, I observe that the gland affected, seems to be the very gland which, after an unsuccessful operation, grew to so immense a size in the case of Jenny Brown, and in her, though the tumor arose from the slightest and most accidental cause, (extraction of a tooth,) without any cancerous diathesis, or other malignant tendency, it proved fatal by suffocation. What might have become of *this* lady, it is easy to foresee, had she not been warned by her surgeon, and alarmed by the recent accession of pain, for her own safety.

"Secondly, when we are consulted what is to be done in any particular case, we are, in other terms, called on to prognosticate what will be the patient's condition at the distance of one or two years. In the present case, the gland is very large, and of a stony hardness. It never can suppurate; it is even threatened with a cancerous inflammation; it is indeed incapable of any other. The pain requires that something should be done, and our prognostics may be safely grounded on this unquestionable assumption, that such a tumor will not fail to grow, and that, in one or two years, the deformity and bulk will of itself be a motive, while the suffocating condition of the patient will be an absolute reason for operating, however dangerous the operation may be rendered by such unwise delay. It is moreover to be observed, that this gland is the submaxillary gland, which has the facial artery niched in between its two

lobes, not so inextricably, indeed, as the parotid is connected with the carotid artery, but in a degree to give trouble to the surgeon, and accompanied with a degree of danger, in the case of operation, which is well worth calculating.

"Thirdly, we are to regard the actual circumstances of every patient as a part of his case, and the danger to this lady, if remanded to her own country, so far distant and so difficult of access, is but too palpable. Should we speak to her the usual temporising language, and say, 'It will perhaps get well; a slight course of mercury or cicuta may be useful, and time may do much; perhaps it may be well to wait;' it may happen that the gland may become stationary in its growth. A mercurial course may be of use, but I fear that this is, in the truest sense, tampering with a tumor, and that time can do nothing but increase the danger.

"It seems to me but too possible that this lady, before she can take a second resolution and accomplish a second journey, will be suffocating and in immediate danger of death. Then we should not venture to do that operation which is now comparatively easy; for this gland being seated in the angle betwixt the trunk of the carotid artery and its first great branch, the maxillary or facial, will distend that angle, and both the trunk and its branch will be too closely united with the tumor to admit of operation, or will make the operation most dangerous and critical.

"Fourthly, though there is no imminent danger in the proposed operation, the circumctances are sufficiently forbidding to make it far from being a matter of choice. My assistant was unwilling that it should be performed without the advice of Dr. Munroe, and his assent seemed rather reluctant. The tumor is of a very considerable size; it is plainly the submaxillary gland, as may be inferred from its shape, size and peculiar hardness; not a lymphatic gland, for then, most likely, more than one would be enlarged. We must be resolved to deal with the artery in one of two ways: either to dissect it so from the tumor as to insulate the artery, and turn the tumor from under it; or, should this attempt threaten to embarrass our

operation, to cut it across where it lies over the middle of the tumor, tying before dividing it, lest it should shrink back towards its trunk. No one circumstance is so favorable to the operation as that extreme hardness of the tumor which makes the operation necessary, for that shows it to be circumscribed, and to be little connected by inflammation with the cellular substance.

"*Notes of the Operation.*

"We had agreed either to dissect so as to lay the artery on one side while employed in extirpating the gland, or to tie and cut across, and so proceed with greater freedom in the more dangerous part of the dissection; but after the first incision, which I made according to the length of the jaw-bone, the incision being long and more free, the several parts appeared in so advantageous a state as to leave no doubt nor difficulty in the rest of our proceedings.

"The artery presented itself arching over the diseased gland, much elongated and serpentine, so that in place of embarrassing the operation with any needless delicacy, or endangering the shrinking up of such an artery towards its trunk, we passed two ligatures of single thread under it, cut betwixt the ligatures, and then proceeded more confidently in extirpating the gland. There we found no such adhesion of it to the trunk, or rather to the sheath of the carotid, as we had reason to apprehend. The tumor was of such a stony hardness, the cellular substance so loose, the arteries so disengaged from it, that without the help of the knife, with only the swallow-tailed end of its handle, which I used as a scalpel, I turned out the tumor in a few seconds, and the tumor carrying its cellular substance along with it, the styloid muscles were left as clear, distinct and bare as after a neat dissection upon the dead subject."

"Case II.*—A young woman of Berwick, whose native peculiarity of accent had got a singular aggravation by such an

* Principles of Surgery, by John Bell, edited by Charles Bell.

uncouth obliquity and imperfect motion of the tongue, as conveyed the notion of her attempting to chew and turn each vocable with her tongue before she proceeded to swallow it, in place of uttering it.

"This was produced by a tumor of very great size, and of an appearance so peculiar as plainly to denote its character. It consisted in a vast collection of matter in the sublingual gland, and as that gland is covered by the whole thickness of the tongue within, and by the mylo-hyoidœi muscles without, and bounded by the line of the jaw-bone, it had the following singularities of character: It could not be distinguished as a tumor, but had rather the appearance of a general swelling of the lower part of the face, jaw and neck, such as often accompanies severe tooth-ache or mumps. Upon laying the hand upon the outside of the neck, below the lower jaw-bone, the whole hand was filled with a swelling, apparently solid, but so little convex or circumscribed as to resemble in no degree the tumor of any particular gland, and yet so limited and so firm as not at all to resemble the general tumefaction proceeding from tooth-ache. Upon introducing the finger into the mouth, you found the tongue raised, turned edge uppermost, and pressed entirely towards the left side of the mouth, the external tumor being upon the right side. Upon pressing the fingers very firmly down by the side of the tongue, and reaching from without, you could sensibly perceive not so properly a fluctuation as an elasticity, which implied the presence of a fluid; the tumor seemed elastic like a foot-ball, but with a degree of tension which made it seem almost solid. It was by comparing a variety of circumstances, especially the original place and slow growth of the tumor, that I confidently referred it to the sublingual gland. In this I had the advantage of the surgeon under whose particular care she was, but I did him the justice to send her back to him, again and again, expressing my opinion, and my wish at the same time, that he should do whatever he might suppose right. By good fortune, she called upon me the day she was to return home, nothing being as yet done to the tumor, but supplied with abundance of blisters and plasters to

apply at a fit opportunity to her throat. I felt now that professional ceremonies should give way to essential charities. I placed her in a chair, and almost without her consciousness, at least before she was aware, I struck a fine bleeding lancet deep into the tumor by the side of the frenum of the tongue, when, from the firm compression of the surrounding parts, the matter, though too gross to pass freely through such an opening, was spewed out from the orifice, in a manner expressly resembling that in which yellow paint is squeezed out from the bladder upon a painter's pallet. It was of a deep saffron color, thicker than mustard, mixed like gruel with seed-like particles, and exceedingly fetid. I knew that the tumor was not emptied, though the outward swelling was almost gone, but I also knew that though I should not enlarge the opening, the second secretion from the surface of the sac, which is in all cases thin, would dilute and wash out whatever viscid matter remained; and when she saw how suddenly my prognostic was fulfilled, she expressed a perfect confidence in whatever I predicted, and a perfect willingness to submit cheerfully to whatever I proposed to do. Next day I introduced the point of a probe-pointed bistoury into the orifice made by the lancet, and knowing that the lingual artery lies on a lower level, imbedded among the muscles, and running along the lower surface of the tumor, while I had over the point and blade of my bistoury nothing but the inside membrane of the mouth, much thickened, I run it fearlessly and at one stroke, as the less painful way, along the whole length of the tumor, when the thickest of the yellow mucus flowed freely or was raked out with the points of the fingers and the handle of the bistoury; and the tongue descended now to its natural level, was in a capacity once more of delivering the peculiar dialect of her native city in all its purity.

"So tense and apparently solid was this tumor, in consequence of the compression by so many surrounding muscles, that her surgeon mistook it for a solid and strumous swelling. I reckoned that in this, as in all cases of sacculated tumor, the second secretion, which was thinner, would wash out the thicker

mucus, and I was not deceived; but she left me too early for me to witness the obliteration of the sac.

"I find it, in all such cases, a matter of some importance, especially in a girl, to anticipate the outward suppuration of any sacculated tumor, by puncturing it, though to a great depth within the mouth and under the tongue, and equally necessary to be at pains in preserving the opening and obliterating the sac; a slight misconduct in this respect occasions much distress to the patient, and much superfluous labor to the surgeon. Among the examples of this which I have had occasion to remark, the following is the most instructive.

"CASE III.—The case of Peggy Hall represents a tumor, which in all its stages, and for a course of three years, was ill understood and worse treated. She was a stout and lusty girl, about twenty-two years of age. The tumor occupied all the left side of the neck, from the lobe of the ear and angle of the jaw, quite to the sternum, displacing the mastoid muscle. This, like the tumor of Jenny Brown, arose from that slight inflammation which follows the extraction of a tooth. More than two years ago, after being distracted with tooth-ache, she had two carious teeth pulled from the lower jaw, and she distinctly re-remembers that two days after the extraction of the sound tooth she was sensible, upon undoing the flannels in which her swollen and inflamed face had been for some time wrapped up, that there was a little lump about the size of a small plum. It lay under the angle of the jaw, and had never ceased to grow, and has now, without the slightest pain or change of color, attained the present size. In the month of April, 1799, she was directed to apply some kind of plaster. In May, Dr. Monroe advised her to have it opened. In a few weeks after, this was attempted by the surgeon of the village in which she lived, who made a large incision, but being soon alarmed, he laid aside the knife and lancet, and prosecuted his work rather by boring than by cutting. He tried, with probes and directors, to make good his way into the sac, but having pushed them very deep, and toiled half an hour in vain, he abandoned his purpose.

"The tumor was distinctly a great sac of fluid secretion.

There was nothing doubtful in the case. The sac lies under the platysma myoides, and under and before the mastoid muscle. The belly of the mastoid being raised upon the bag or tumor, feels soft and flaccid, and might have seemed to an unskilful surgeon to form a part of the tumor. By making his incisions over the belly of the muscle, he could not penetrate to the sac otherwise than through the body of the mastoid muscle. Having cut to a considerable depth among solid and quivering flesh, he became alarmed. Willing still to penetrate farther, and yet without danger, he bored with his finger, cut a little obliquely with his knife, and bored a little more with his directory, till, having buried it apparently in the tumor, to the depth of three or four inches, he believed, and to the ignorant relatives and patient seemed to prove, that there was no fluid in the tumor, while there was nothing singular in all this but his own awkwardness. He had penetrated entirely under the belly of the mastoid muscle, pushing his probes obliquely between it and the sac. To avoid the great vessels of the neck, he wrought obliquely backwards, and by cutting obliquely backwards, he made good his way under the belly of the mastoid muscle.

"The young woman endured the disappointment and suffered the tumor still to extend, not without great inconvenience and deformity, for seven or eight months, the operation being then performed more correctly and confidently. Every circumstance tended to confirm the notions I had formed of this awkward proceeding. The surgeon who now operated was timid and careless in conducting the cure.

"The incision through the skin only was freely made. The incisions through the platysma myoides were made timidly, the flesh of its fibres retracting and quivering as they were cut. The sac then burst from betwixt the divided fibres of the muscle, white and transparent. Upon this being divided, several pounds of thin serous fluid gushed out. Then the long iron probe was passed across the cavity of the tumor, and its point cut upon at the anterior edge of the mastoid muscle; in short, near the place of the former incisions; whereas, to lie across

the tumor, the point should have been cut out behind the belly of the mastoid, and then the seton or cord would have more effectually inflamed the sac and obliterated the cavity.

"But this girl was doomed still to suffer from timid practice. The seton ill introduced at first, was worse managed. In whatever way introduced, it should have been made to obliterate the sac. The sac was permitted to remain always half full; its walls were never brought together so as to favor their adhesion; the cord was even withdrawn and the orifice permitted to heal; the fluid again collected to the amount of two pounds; it was again evacuated by freeing the old opening, slitting up a part of the muscular sac with a probe bistoury, and obliterating it, (a purpose which was very slowly accomplished,) by strong injections of port wine and stimulating medicines.

"The case of this girl, which was protracted by unskilful treatment to six months, should have been accomplished in three weeks, and while the sac was pouring out matter from its thickened walls, and hardening into a solid tumor under the jaw, the girl was in danger of having established an incurable and growing disease; for a tumor so situated, and proceeding from such a cause, could never, by the most dexterous operator, have been dissected away from the neck and jaws."

I have felt no hesitation in quoting at length the preceding narratives of cases, and the excellent remarks attending them. Facts like these impress the mind of the reader much more forcibly and permanently than dogmas. In the instances above cited, we see what serious consequences to the glands of the mouth may be occasioned by the operation, to which every man thinks himself competent—the extraction of a tooth; and we also see how very important it is to be able to detect the nature of the disease in its earliest manifestation, and to apply the bold prompt remedy which only can prevent the threatened mischief.

Certainly, if the dentist, however careful, may be the unfortunate agent to produce such tumors, he ought at least to be prepared to do all that skill can do to remove them.

Tumors of the Parotid Gland.

The parotid is the greatest of the salivary glands, and furnishes the largest part of the saliva. It is situated in the irregular cavity bounded by the ramus of the lower jaw and the mastoid process of the temporal bone, penetrating as deeply back as the styloid process, and even dipping behind it. It extends from the zygoma to the angle of the jaw, and from the meatus externus and mastoid process to the masseter muscle. This gland is subject to ordinary inflammatory swelling from cold, and especially to a peculiar specific inflammation called cynanche parotidea, or vulgarly, mumps.

The parotid is also sometimes the seat of carcinomatous disease, and may be affected by all the modes of disorganization which affect glandular structures.

The position of this gland, and its vascular and nervous connections, render its extirpation one of the most difficult operations in surgery. Until recently, the complete extirpation was considered impracticable, and even now many doubt that it has ever been effected. Allen Burns, Boyer, Richerand and other celebrated anatomists and surgeons declared that the safe extirpation of the whole parotid was impossible, but there can be no reasonable ground for rejecting the testimony of the distinguished and honorable men who claim to have succeeded in the operation.

The credit of having first demonstrated the practicability of this operation by actually performing it, seems to be due to Prof. Samuel White, of Hudson, N. Y., who extirpated the entire gland, for a carcinomatous tumor, in the year 1808.

Notwithstanding that the patient was examined by experienced surgeons, who satisfied themselves of the fact of the complete extirpation, the operation was not attempted in Europe until 1823. It has since been performed repeatedly on both sides of the Atlantic.

As the result of the testimony now submitted to the profession, it is sufficiently determined:

1st. That the exsection of the parotid, though an exceedingly difficult, is, in the hands of a good anatomist and skilful surgeon, a feasible operation.

2d. That the carotid artery and its larger branches are necessarily implicated in the operation.

3d. That it is impossible to spare the facial nerve, and consequently paralysis is an inevitable result of the operation.*

I think it unnecessary to give any directions, gathered from the experience of the most successful operators, for the performance of so very delicate and dangerous an operation as the extirpation of the parotid. No sane man will attempt it unless perfectly acquainted with the anatomy of the parts, and as familiar as reading can make him with the history of previous operations. To one thus prepared, there needs but the bold heart and expert hand to secure at least the utmost likelihood of success which the character of the operation will admit. There are no men whose habits of operating beget more facility in manipulating, more nice manual dexterity, than dentists, and if they will acquire the necessary information, they may become the most expert of operators. The example of Dr. S. P. Hullihen, of Wheeling, is worthy the imitation of all who would be scientific dental surgeons.

Salivary Fistula.

The duct of the parotid gland, called the duct of Steno, emerges at the upper extremity of the middle third of the anterior edge of the gland, and proceeds forward and inward, directly under the skin, and on the masseter muscle. It is distant from three to five lines from the lower edge of the zygoma. It passes on the anterior edge of the masseter muscle, penetrates between the fibres of the buccinator muscle, and opens in the lateral walls of the cavity of the mouth opposite the first posterior molar tooth of the upper jaw according to Meckel, the second molar according to Harris, and the second and third

* Cooper's Surg. Dict., by Reese.

bicuspis according to Cooper—the situation of the opening differing somewhat in different subjects.

This duct, being very superficially situated, is exposed to injury, and is often wounded by an incautious operator, or by a a blow. Sometimes, also, the duct may be obstructed by the pressure of a tumor or by inflammation. In such cases the saliva will accumulate until it makes a passage through the cheek, and continuing to pass through the opening, will form a permanent opening, which is called *salivary fistula.*

The discharge of the saliva over the cheek is very annoying, and the artificial opening is a very serious deformity.

A variety of methods have been employed to cure salivary fistula. Monro inserted a seton from the external fistulous opening into the mouth, and kept it there until a new fistula, open both on the cheek and in the mouth, had been fully formed. He then destroyed the edges of the external opening with lunar caustic, and caused adhesion between the new surfaces produced by the sloughing of the superficial eschar. The saliva of course continued to flow through the fistulous channel into the mouth.

Desault also employed a seton, but he introduced it through a canula, as follows: Placing two fingers of his left hand into the patient's mouth, and placing them between the teeth and cheek opposite the fistula, he introduced a small hydrocele trocar in its canula, through the cheek, just before the opening of the posterior part of the duct, and in a direction inclined a little forward. An assistant now took hold of the canula, while Dessault withdrew the perforator and passed a line of thread through the tube into the cavity of the mouth. The canula was then taken out, and a seton, which was then fastened to the end of the thread in the mouth, was drawn from within outwards, but not so far as to come between the edges of the external opening, where the thread alone lodged, and this was fastened with sticking plaster to the outside of the cheek. The outer wound was dressed with lint and compresses. Dessault used to change the seton daily, introducing regularly rather a larger one, and always taking particular pains not to permit it to pass between the edges of the external opening.

The patient was enjoined to use the jaw as little as possible, and for some time confined to liquid food. In about six weeks he omitted the seton, leaving in the thread for a little while longer. This being taken away, he completed the cure by touching the little aperture remaining, with caustic. Beclard succeeded several times, by passing a leaden stilet from the inner surface of the cheek into the duct, at the point where it was obstructed. He then made a fresh incised wound of the external fistulous opening, and closed it with the twisted suture.

Mr. Samuel Cooper prefers the operation of Beclard, when possible, as causing a more speedy cure.

CHAPTER XIX.

TUMORS REQUIRING AMPUTATION OF A PART OR THE WHOLE OF THE UPPER JAW.

The superior maxillary bone is frequently the seat of tumors, which, from their enlargement, interfere with the functions of speech, deglutition and respiration, and often prove fatal.

Some of these tumors are of the malignant fungus variety. These, commonly, are seated in the antrum. The first indication of their presence is an aching of the face, which is usually attributed to tooth-ache, but which continues and aggravates, notwithstanding all the efforts to alleviate it. The jaw rapidly swells, and the nostril of the affected side is soon obstructed to respiration, and discharges matter. The walls of the antrum are soft, and yield readily to pressure. The nostril is filled with a bleeding tumor. The disease rapidly progresses—finds its way into the throat, detaches and pushes forward the teeth, throws out an enormous fungus into the mouth or on the cheek, hectic and emaciation rapidly reduce the patient, and he soon succumbs to aggravated suffering.

With such a disease as this, we have no means of contending. An operation would be worse than useless. Fortunately, its progress is rapid, and death speedily brings the ardently desired relief.

There is another form of tumor, which commences in the periosteum and bone, often from some accident, as a blow or fall. This tumor is of slow growth, and is solid and resisting. It is little sensitive, does not bleed, nor involve surrounding tissues except mechanically by its growth. In short, it is a tumor of the *benign* kind, not connected with constitutional disease, and it may be removed with entire safety.

In proceeding to remove a tumor of this kind, involving the superior maxillary, the surgeon must have in view, 1st. To take away every portion of the disease; and 2dly. To cause as little deformity as possible. The tumor should be got out whole; any incision into it would probably induce an embarrassing hemorrhage.

The operation itself is by no means dangerous, as compared with other amputations, and it may be performed without much difficulty, by a dexterous and confident surgeon.

Mr. Liston's directions for performing the operation are as follows: "Having to work among bones, you must use a good strong and broad knife—one with which you can make free and proper incisions. To uncover a very large tumor, you may make one incision from the point of the cheek-bone to the corner of the mouth, carrying it outwards also in the direction of the zygoma: another from the angle of the eye to the middle of the upper lip. The mark of these incisions must always be more or less apparent. But if you have a tumor of moderate size to deal with, you should make one incision from the angle of the eye, down the side of the nose, bring it under the alæ, and cut away the alæ from the edge of the superior maxillary bone; then you bring the cut down well towards the columna nasi, push the knife through the lip, and cut right down the median line. A scar from that incision will scarcely be perceived if the parts are cleverly and carefully put together.

You make another and much less extensive incision from the

same point, in the course of the fibres of the orbicularis palpebrarum, out towards the zygoma, carrying the knife under the eye; you can then turn downwards and outwards a large flap, uncover the tumor, and get to the processes of the bones. These being divided, the tumor almost tumbles out.

Before commencing your incision, or after you have turned the flap back, you may require to take out one tooth, and you remove the lateral incisor. You must be provided with strong edged cutting forceps for dividing the bones, and very strong scissors for separating longitudinally the palatine arch. Before applying them, you cut a notch out of the alveolar process of the tooth removed, with the point of the cutting forceps. Very often you are compelled to take away the os mala, or perhaps you may saw it through. Supposing that you are going to take away the os mala by the forceps, you divide the zygomatic arch and also the junction of this bone with the frontal bone, at the transverse facial suture. You cut the nasal process of the maxillary bone; then putting one blade of the scissors into the nostril, and the other into the mouth, cut down and you have destroyed all the attachments of the tumor. You must next carefully detach the parts within the orbit, cutting the superior maxillary nerve far back; that must not be drawn out from its origin; then putting your finger on the tumor, you detach with your knife any remaining connections, and out tumbles the mass. You will be astonished to find how little blood follows an operation of this kind; it can be done in a very few minutes. There is seldom any necessity for stopping the bleeding temporarily by pressure on the carotid; after you have turned the tumor out, perhaps you will not find a single vessel to tie, or only one. You take hold of that with the fingers, put on a ligature, and then lay the flap down. The tumor should come out quite entire, and after stopping any vessel that may bleed, you put a dossil of lint into the cavity, bring over the flap, and put the parts neatly together.

"You introduce some points of interrupted suture under the eye and by the side of the nose; you attach the alæ, and then put two points of twisted suture into the upper lip. In a

short time the cavity fills up, and it is altogether an exceedingly satisfactory operation. I have extirpated the upper jaw to remove fibrous tumors, nine or ten times, without the loss of a single patient. It is an operation more successful than the amputation of the leg, or, at all events, of the thigh, and is attended with as little risk."

AMPUTATION OF THE LOWER JAW.

The lower jaw is also sometimes the seat of tumors which may, like those of the upper maxillary, require the use of the knife.

These tumors sometimes consist of a deposit of a glairy fluid between the plates of the bone, gradually distending it; sometimes they are malignant, at others they consist of cartilage and bone.

Portions of the lower jaw have very frequently been taken away, and sometimes with but little difficulty. It occasionally happens, however, that a very large portion, even the whole, requires to be removed.

In exsecting a portion of the lower jaw, it is very important to avoid unnecessary disfiguration, and our ingenious countryman, Dr. Rhea Barton, has made an excellent suggestion on this point.

It is to preserve a rim or margin of the bone, so as to preserve the outline of the face, and afford a base for the insertion of false gums or teeth. In all cases where the extent of the disease will permit, this should be done, as the rim of bone thus preserved will be of immense use to the patient.

The incision through the soft parts should be made beneath the base of the jaw, so as to hide the cicatrix as much as possible.

Prof. Mütter has succeeded in detaching a tumor with a portion of the jaw, without any external incision or deformity whatever. This tumor was seated upon the symphysis and two-thirds of the left ramus of the bone. The patient being seated, with her head supported by an assistant, the tumor was laid bare in its whole extent, by detaching the lip and integu-

ments of the chin and cheek from the adjacent bones. *No external incision was made*, yet Dr. M. had no difficulty in turning the soft parts down under the bone, so as to leave its base perfectly visible. Next, partly with a saw and partly with a strong scalpel, he cut through the base of the tumor, leaving a small rim of the bone, composed of the rounded portion of the lower jaw. Two perpendicular cuts were then made, (one on each side of the mass,) with the cutting forceps—and the tumor, thus loosened, was readily removed with a few strokes of the scalpel. As the hemorrhage was profuse, the actual cautery and pledgets of lint steeped in creosote were applied, and with entire success. The lip was then brought back to its original position, and cold water dressing applied to the face. A perfect cure, without the slightest deformity, was accomplished in two weeks.

To our countryman, Dr. Mott, is due the honor of having first attempted, and executed successfully, the amputation of the lower jaw at the articulation; after him, Mr. Cusack, of Dublin, performed it. According to a note by Dr. Reese, in Cooper's Surgical Dictionary, the operation had not been performed by any others up to 1842. Mr. Liston, in his lectures delivered in 1844, speaks rather sneeringly about the "fuss" made about extirpating the jaw, and gives the credit of the operation to Mr. Cusack, of Dublin. He then proceeds to describe it as though it had been an every day operation with him. This conduct of Mr. Liston is remarkable enough, but it is more strange that his editor, Prof. Mütter, has not corrected the error, and done justice to Dr. Mott.

The operation is one of the utmost difficulty, and it is useless to give any directions for its performance. None but a surgeon of well tried skill would be justifiable in undertaking it, and such a one would pay but little attention to *directions*. These of Mr. Liston may be well enough, but we do not know that he ever performed the operation on a living body.

Dr. S. P. Hullihen, a practising surgeon dentist, of Wheeling, and one of the best surgical operators in this country, has performed an operation upon the jaw, which well deserves to be recorded here. As Dr. Harris justly remarks, "the ingenu-

ity, skill and boldness displayed in the conception and performance of this complicated operation, place Dr. Hullihen at once among the ablest surgeons of the day." It is the more worthy of notice here, as having been performed by a dentist who thus furnishes a model of what we would have a dentist to be—not a mere mechanic, employed to repair the teeth, or, if necessary, extract them—but an accomplished physician and surgeon, who, while devoting his attention particularly to the teeth, is prepared to undertake the treatment of the adjacent parts, however formidable and complicated their diseases may be.

"Miss Mary S——, aged 20, daughter of the Hon. William S——, of Ohio, came to Wheeling, in the spring of 1848, to obtain relief from the effects of a very severe burn, which she had received fifteen years before. The burn was principally confined to the neck and lower part of the face, and its cicatrix produced a deformity of the most dreadful character. Her head was drawn downwards and forwards, the chin was confined within an inch of the sternum, the under lip was so pulled down that the mucous membrane of the left side came far below the chin, the under jaw was bowed slightly downward, and elongated, particularly its upper portion, which made it project about one inch and three-eighths beyond the upper jaw. In front there was scarcely any appearance of either chin or neck. She was unable to turn her head to either side, the cheeks and upper lip were dragged considerably downward; she could not close her eye-lids; she could not close her jaws but for an instant, and then only by bowing her head forward. She could not retain her saliva for a single instant; and, as might be expected, her articulation was very indistinct.

"She had been taken to the city of New York some years before, for the purpose of being relieved from this deformity, and was placed under the care of two of the most distinguished surgeons in that city, who performed an operation by dissecting up the cicatrix on the neck, then raising the head and sliding up the cicatrix from its original position, leaving a raw surface below to heal up by granulation. I need scarcely add that the operation was entirely unsuccessful.

"After a careful observation of the case, it became evident that such a complicated deformity could be best remedied by performing three separate operations: one upon the jaw, another upon the neck, and a third upon the under lip.

"To remove the projection of the under jaw, seemed to require the first attention. Unless that could be done the other operations, however successful, would add but little, if any, to the personal appearance of the patient. This lengthening of the jaw had taken place entirely between the cuspidatus and first bicuspid tooth of the right side, and between the first and second bicuspids of the left. By the elongation, the teeth just described were separated on both sides about three-fourths of an inch.

"To saw out the upper edge of these elongated portions of the jaw, and then to divide that part of the jaw in front of the spaces thus made, by sawing it through in a horizontal manner, so as to permit the upper and detached portion to be set back in its original position—appeared to be the only possible way of remedying the deformity. This plan I therefore adopted, and performed the operation on the 12th day of June, in the manner now to be described:

"The operation was commenced by sawing out, in a V shape, the elongated portions, together with the first bicuspid on the left side, each section extending about three-fourths of the way through the jaw. I then introduced a bistoury at the lower point of the space from which the section was removed on the right side, and pushed it through the soft parts close to and in front of the jaw, until it came out at the lower point of the space on the left side. The bistoury was then withdrawn, and a slender saw introduced in the same place, and the upper three-fourths of the jaw, containing the six front teeth, was sawed off on a horizontal line ending at the bottom of the spaces before named, the detached portion being still connected, on the outer and inner sides, to the jaw below, by the soft parts.

"After having with the bone nippers removed from the detached portion the corners which were created by the horizontal and perpendicular cuts of the saw, it was set back so that the

edges from which the V shaped sections were removed came together.

"Thus it will be perceived that this portion of jaw and teeth, which before projected and inclined outward, now stood back and inclined inward, and in its proper and original place.

"In this position the jaw was secured, by passing ligatures around the cuspidati in the detached portion and the now adjoining bicuspids in the sound portion, then taking an impression of the jaw in very soft wax, a cast was procured, and a silver plate struck up and fitted over the teeth and gum, in such a manner as to maintain the parts in that same relation, beyond the possibility of movement.

"The patient declared that the operation gave her little or no pain. There was a little swelling about the chin during the first three days after the operation, but not the slightest uneasiness. In this way the case progressed; the gum healed in a few days, the jaw united strongly and in the time bones usually unite, and the wearing of the plate was discontinued within six weeks after the operation was performed.

"The deformity of the jaw being now removed, the next thing to be done was to relieve the confined condition of the head, and the distortion of the face and neck resulting therefrom. This I determined to accomplish, if possible, after the manner of Prof. Mütter in similar cases, and I accordingly performed the operation on the 31st day of July, assisted by Dr. Wissell.

"I began by dividing the skin immediately in front of the neck, about half an inch above the sternum, and then carried the incision back about three inches on each side. I then commenced a careful division of the strictures which were so thickened in front as to extend to the trachea, and on the sides as not only to involve the platysma myoides, but a portion of the sterno-cleido-mastoid muscle also. After dividing every thing that interfered with the raising of the head and the closing of the mouth, as far as the incision was now made, it became evident that to give free motion to the head, the incision on the neck must be extended back through the remaining cicatrix,

which was at least two inches wide on one side, and about an inch and a half on the other.

"This was accordingly done, the whole presenting a wound upwards of nine inches in length and nearly five in width. A thin piece of leather was now cut in shape of the wound, but somewhat larger, and placing it upon the shoulder and arm, immediately over the deltoid muscle, a flap nearly ten inches in length and five in breadth, having an attachment or neck two inches wide, was marked out, and then dissected up as thick as the parts below would permit. This flap was now brought around and secured in the wound on the neck by the twisted suture, the sutures being placed about an inch and a half apart. Between each of these sutures, one, two, and sometimes three small stitches were inserted, depending entirely upon the number necessary to bring the edges neatly together. These stitches were of fine thread, had a very superficial hold, produced little or no irritation, and served to keep the parts in better apposition than any other means I could have devised. The wound of the shoulder was next drawn together about one-half of its entire extent; the remainder was covered with lint. One long narrow strip of adhesive plaster applied around the neck to support the flap, and over this a cravat tied in the usual way, constituted all the dressing deemed advisable at this time.

"The patient bore this tedious and very painful operation with great fortitude, and uttered scarcely a murmur. She was somewhat exhausted, but not from the loss of blood. There was no vessel divided of sufficient importance to require a ligature.

"Aug. 1. During the fore part of last night, the patient was somewhat distressed, was very unmanageable, would talk incessantly, and occasionally sat up in bed. An anodyne was administered at 12 o'clock, after which she rested much better and slept some. Complains of sickness of the stomach this morning; has vomited three or four times; flap very pale; pulse rather weak. Directed to refrain from all kinds of drinks.

"2d. Complains only of pain in the shoulder; was much distressed the latter part of last night, on account of a retention of urine. The catheter was employed, and about three pints

of urine drawn off, after which she rested well. Pulse somewhat excited; flap better color.

"3d. The patient rested well last night; the use of the catheter still necessary. All efforts to keep the patient from talking and moving unavailing; color of the flap rather pale, save at the extreme point and about two inches along the lower edge, which is assuming rather a dark blue color. Pulse about the same as yesterday; removed a pin from near the point of the flap, and enveloped the neck in cotton batting. Patient complains of hunger; chicken broth ordered.

"4th. Patient rested well; the use of the catheter yet necessary; complains of slight headache; the color of the flap nearly natural, and even the point is assuming a healthy hue, and appears to be uniting; pulse almost natural.

"5th. Urinates without difficulty; bowels moved by injections; patient entirely free from pain; pulse natural.

"6th. Dressing removed; the flap is uniting by the first intention along both sides, throughout its entire extent; the greater part of the pins and stitches removed.

"7th. The remainder of the pins and stitches removed; patient perfectly comfortable and cheerful.

"10th. Sat up all day by the window.

"16th. Walked out to take an airing.

"During the whole progress of the cure, there was not the slightest swelling or undue inflammation in the flap or about the neck. The patient was slightly hysterical for the first few days, but never complained of any thing but pain in the shoulder, a slight headache of a few hours duration, and the uneasiness occasioned by the retention of urine. The wound on the shoulder granulated rapidly and skinned over in about six weeks after the operation. It was curious to observe that upon touching the flap after it had healed in the neck, the patient would always refer the sensation to the shoulder or arm from which the flap was taken.

"The confinement of the head, and the distortion of the face occasioned by the strictures being now removed, the next step was to relieve, as far as possible, the very great deformity of the under lip.

"The under lip, from being dragged down and greatly stretched by the former projection of the under jaw, was rendered greatly too large, so that it pouted out an inch or more further than the upper lip. This, together with a turning out of the mucous membrane on the left side, which extended nearly down to the lower edge of the chin, making the lip too short on that side, was the nature of the deformity yet to be relieved.

"To remove this unseemly appearance of the lip, the inverted portion was cut out in a V shape, extending down to the flap in the neck, and sufficiently large to reduce the lip to its proper size. The edges were then brought together, and secured after the manner of a single hare-lip. The wound healed in the most beautiful manner, and the appearance of the lip was greatly improved; but there yet remained a deep depression or notch in the edge, sufficiently large to keep exposed the tops of two or three teeth, besides preventing the coming together of the lips on that side.

"I now determined to raise, if possible, this depressed portion of the lip, and for this purpose I passed a bistoury through the lip, about two lines from the free edge, first on one side of the depression, and then on the other, and then carried the incisions downward to meet at a point on the lower edge of the chin.

"The depressed portion of lip now lying between the two incisions was next dissected loose from the jaw, and then raised to a level with the remainder of the lip, and there retained by pins, after the manner of dressing a double hare-lip, the line of union forming a letter V.

"This operation was as successful as the others, and the original deformity being now removed, the young lady, though still bearing evidences of the burn, has the free use of her head, eye-lids, jaws and lips, and may mingle in society without particular note or remark."

CHAPTER XX.

DISEASES OF THE ANTRUM OR MAXILLARY SINUS.

The cavity which bears these names is liable to be the seat of a variety of diseases. For the most part these are simple, and not at all malignant in their character; occasionally, however, tumors and ulcers of a carcinomatous kind fix their seat in this secluded cavity, where their presence is unobserved until their local devastations or constitutional impressions have reached a most serious extent.

The danger of diseases of the antrum, however, cannot be estimated entirely by their specific character. The geographical situation of the cavity gives greater importance to its diseases than essentially belongs to them. Many a benign tumor, originating here, has proved fatal by mere growth and bulk; the danger having been masked by the concealed position and the little sensibility of the parts, until interference was useless.

Nothing can be more important, therefore, than early attention to any of the, commonly obscure, symptoms which intimate the presence of diseased action of any kind in this pathologically important sinus. The dentist commonly has the first opportunity to observe these signs and detect their cause, and he should always be ready to perceive and interpret them.

The lining membrane of the antrum is liable to be affected by all the diseases common to the mucous tissues. It may be congested, inflamed and ulcerated; it may undergo alterations affecting its secretions; it may be the seat of various tumors, or may be involved in such morbid formations commencing in the bony structures or the thin fibrous tissue which attaches it to the bones.

In treating further of diseases of this cavity, I will ask the attention of the reader to, 1st. Dropsy or retention of mucus; 2d. Inflammation of the lining membrane; 3d. Suppuration; 4th. Caries, necrosis and other morbid conditions of the bony walls; 5th. Polypi and other tumors; 6th. The presence of insects in the cavity.

Dropsy, or Retention of Mucus.

The term dropsy is entirely misapplied to this affection, and should be discarded. The disease has no similarity to dropsical swellings: those are occasioned by effusion of water, while the affection we are considering is a distension of the antral cavity by retained mucus.

If from any cause the antral openings become closed, the secretion of the lining membrane, no longer finding exit by evaporation, must accumulate in the cavity of the sinus. Being retained, it will necessarily degenerate; being degenerated, it will irritate the membrane, and the membrane being irritated, will pour out more than its usual quantity of secretion. The quantity accumulated will at length completely fill the cavity, and when once the sinus is completely filled, every additional drop of fluid thrown into it will cause the whole mass to act with great power upon the walls which confine it. However thick the walls, and however strongly knit together, they cannot withstand the hydraulic pressure continually augmenting within them. They are gradually forced outwards, and a rounded solid tumor gives external evidence of the outward pressure of the contained fluid.

Until the pressure becomes sufficient to distend the bones, the patient does not complain of pain; but as the walls of the cavity gradually yield and press upon the soft parts, pain is felt, which becomes more and more severe as the tumor increases. The integuments covering the distended antrum become swollen and red. A smooth hard tumor presents itself, either in the roof of the mouth, or under the orbit, or under the cheek, and unless the contained fluid be speedily evacuated, the contents of the antrum will force their way through the bones.

As the distension of the walls of the sinus indicates nothing more than the fact of its being filled with some distending body, it may often be difficult at first to decide whether the contents be mucus or some kind of solid growth. So long as the tumor presents a tolerably uniform hard surface, there can be no cer-

DENTAL MEDICINE,

AS CONNECTED WITH THE

STUDY OF DENTAL SURGERY.

A

PRACTICAL TREATISE

ON

DENTAL MEDICINE,

BEING A

COMPENDIUM OF MEDICAL SCIENCE,

AS CONNECTED WITH THE

STUDY OF DENTAL SURGERY.

BY THOS. E. BOND, A. M., M. D.

PROFESSOR OF SPECIAL PATHOLOGY AND THERAPEUTICS IN THE BALTIMORE COLLEGE OF DENTAL SURGERY.

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1851.

ENTERED, according to the act of Congress, in the year one thousand eight hundred and fifty-one, by LINDSAY & BLAKISTON, in the Clerk's Office of the District Court of the Eastern District of Pennsylvania.

TO

MY FATHER,

THIS WORK IS RESPECTFULLY DEDICATED,

BY

HIS SON.

PREFACE.

The Baltimore College of Dental Surgery was organized with the design of teaching Dentistry as a regular branch of Medicine, in which relation only, it can be regarded as a scientific pursuit and the practice of it esteemed a profession.

With this view it was arranged that the Faculty should consist equally of Dentists and practicing Physicians, and to the author of this treatise was entrusted the chair of Special Pathology and Therapeutics. Commencing the performance of his duties with no larger amount of knowledge of the subject than is commonly possessed by medical men, he has been led to discover much more importance in it than at first he could have supposed to exist. Endeavoring to avoid the very natural error of exaggerating the value of isolated facts or doubtful statements, upon matters, at once novel and from the circumstances peculiarly interesting, he has found that many things which at first he was disposed to regard as unlikely, are, nevertheless, well attested and established facts; and, after mature investigation, he has become fully convinced that the relations of the teeth and their appendages with other, and even with vital, parts, are sufficiently important to be carefully studied both by the Dentist and Physician.

After ten years experience as a teacher of these sub-

jects, he has found it absolutely necessary that a compendium of medicine should be furnished, in which should be brought together, in a small compass, such selected information as should meet the wants of the Dental Surgeon, and as none has been prepared by another he has reluctantly undertaken the task.

The difficulty of performing it will readily be conceived, when it is observed how much was proper and how much was irrelevant: how cautious it was necessary to be, that no needless matter should be introduced, and how careful that nothing pertinent should be omitted.

Without the pretension of having done it well, the author is yet gratified that it has been done at all.

Though particularly intended for the Dentist, the author flatters himself that he has presented the subject in such a form as will render it deserving the attention of the general practitioner.

It is not the custom of our profession to consider any thing unworthy of attention which has any bearing, however remote, upon the benevolent pursuit to which we have devoted our lives, but to the most fastidious it may be said, that subjects which have been thought worthy the attention of Hunter and Rush, may be investigated by all without fear of degradation.

THE AUTHOR.

BALTIMORE, *Dec.* 31, 1850.

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ARTICLE I.

Dental Neuralgia. By A. C. Dayton, M. D., Dentist, Vicksburg, Miss.

The sensitive nerves of every part of the body are liable to be affected by that peculiarly distressing and painful disease, commonly called neuralgia or tic douloureux. If all the nerves were equally exposed to its exciting causes, it is probable we should meet with it as often in one part as another. This, however, is not the case. It affects the nerves of the head and face almost exclusively. We find it oftener in some of the branches of the fifth pair of nerves than in all the other nerves of the whole body. So true is this, that systematic writers on this disease for a long time recognised and described only four varieties, (see Cooper's Surgical Dictionary,) which they call, 1st. Frontal neuralgia, the seat of which is that branch of the fifth pair which comes out above the socket of the eye, and is spread upon the forehead. 2d. Suborbitary neuralgia, affecting that branch of the fifth pair which comes out below the eye, and is spread upon the cheek by the side of the nose. 3d. Maxillary neuralgia, affecting the nerves of the lower jaw, chin and lips; and 4th. Facial neuralgia, which, it is said, has

its seat in those branches of the seventh pair which are spread upon the face, but which are so intimately connected with the facial branches of the fifth pair, that it is hard to tell in which it commenced, as both are early involved in the disease, and their fibres are so interlaced and intermixed, as to render any distinction difficult, if not impossible.

This painful affection sometimes, however, occurs in other nerves. Denmark mentions a case involving the nerves of the arm. Abernethy speaks of a case affecting one of the fingers. Sir Astley Cooper and other writers mention similar cases, but they are so rare and so irregular, that they have not been classified and systematically described in the text books, while those affecting the several branches of the fifth pair of nerves, are of constant and regular occurrence.

From the above facts, it is evident that these nerves are subject to the influence of some cause of disease, which does not act with equal force on the other nerves.

This cause is dental irritation. The fifth pair of nerves supplies the teeth of both the upper and lower jaws. The terminal dental branches are exposed to many sources of irritation from which the other nerves of the body are usually free, such as the contact of the air—of the fluids of the mouth—and of alimentary substances; the influence of dead roots of teeth; pressure from the enlargement of the ends of the roots of teeth, inflammation of the gums, inflammation and suppuration of the sockets, &c., &c.

Neuralgia originating from this cause, may very properly be termed DENTAL NEURALGIA; and the object of this paper is to investigate the pathology and treatment of the disease.

There is no fact, in the history of disease, better known, or more universally admitted, than that the *suffering* produced by it is often felt in a part distant from that which is the actual seat of the disorder; the *seat* of irritation is in one organ, the pain, and often other apparent *effects* of the irritation, are manifested in another. Thus, inflammation of the stomach causes pain in the head; inflammation of the liver is felt in the shoulder; disease of the hip joint causes pain on the inside of the

knee; irritation in the bowels sometimes causes cough, pain in the chest, difficulty of breathing; and, indeed, nearly all the symptoms of inflammation of the lungs, or, in other cases, of inflammation of the brain.

I doubt if we are yet in possession of such information as will enable us perfectly to understand and explain these phenomena. It is common to say, that they occur from the influence of *sympathy*. We say that the shoulder *sympathises* with the liver; that the head sympathises with the stomach, the knee with the hip, and the lungs and the brain with the intestinal tube. I use the word as others have, and will proceed to examine some of the extensive and wonderful sympathies which are connected with the teeth and their appendages.

Let us see if we cannot attain to at least a partial understanding of these mysterious influences. The careful and attentive observer of disease cannot fail to discover that they most frequently exist between organs which are supplied by branches of the same nerve, or by nerves which have their origin near each other in the brain, and it seems most probable, that the diseased influence is transmitted from the organ first affected, through its proper nerve, to the brain, where it causes irritation at the roots of the nerve through which it was sent, and this irritation extends to the contiguous portions of the brain, and is thence sent back through the other branches of the same nerve, or through the other nerves which have their origin in the affected region, so as to be manifested or felt in the organs on which they are spread, or in the fibres of the nerves themselves. If this explanation is the true one, (and it harmonizes so well with all the facts, that I cannot doubt its truth,) it will enable us to understand, in part at least, the influence of the diseases of the teeth, not only in causing neuralgia of the head and face, the eye and ear, and other parts supplied by branches of the fifth pair and their own nerves, but of other parts which are associated with them only by deriving their nerves from the same locality in the brain.

In most cases of dental neuralgia, however, the pain is felt in another branch of the fifth pair, as we have already had oc-

casion to say. The seat of irritation is in the branches supplying the teeth, while the pain is felt in branches supplying the temple, the forehead or the face, the ear or the eye.

In order to understand this more perfectly, let us go a little into detail. A tooth in the lower jaw is decayed, and its pulp, containing the terminal extremity of its nerve, exposed. The pain is at first felt in the tooth. It is simply tooth-ache. The irritation very naturally extends down through the root to the main trunk of the submaxillary nerve. It then seems to the patient to involve all the teeth on that side of the jaw. He can hardly say which aches most, or which was the original seat of the disease. He now calls it "jaw-ache." By further extension, the branches supplying the chin and lip are implicated. In time the disease extends back, and involves other branches, which come off nearer the brain. Then the pain is felt in the temples and on the side of the head. In the mean time, the pain in the tooth has ceased. The patient, occupied with his more intense and more extensive sufferings, perhaps forgets that it was ever painful. The pain may continue to affect the whole course of the nerve and its branches, or it may locate at some point and become an independent disease. Such is the history of many cases of "maxillary neuralgia," as it is commonly called.

An upper tooth may be affected in the same way. It receives its nerves from the upper maxillary branch of the fifth pair. The irritation extends to the main trunk of the nerve. Some branches of it supply the eye, which may become the seat of pain or of more serious disease, such as extreme sensitiveness to light, dimness of vision, and, as has happened in some cases, of absolute blindness.

A branch of this nerve comes out above the eye, to be spread upon the forehead. When this becomes the seat of pain, it is the frontal neuralgia of the authors.

Another branch of this nerve comes out below the eye, and is spread on the cheek by the side of the nose, and when this becomes the seat of pain, it is the suborbital neuralgia.

The filaments of these nerves, and those of the seventh pair

are so intermixed and interwoven in the face, that one is liable to be affected by the other; and if the seventh pair becomes affected in this way, we have what is described as facial neuralgia.

But if we examine no further than this, we will have but a very imperfect conception of the matter. This is the most *direct*, but probably not the most *common* mode in which the diseased condition of the mouth produces neuralgia. It operates, also, indirectly through the stomach, through the brain, or through the general nervous system.

1st. *Through the stomach.*—Irregularities and errors in diet have long been reckoned among the active causes of neuralgia. They of course produce their first effect upon the stomach. The nervous disease is a consequence of the stomach's derangement. The pain in the head or face is sympathetic, and may be caused as well by *any thing else* that will derange the action of the stomach, as by an error in diet; and it is a well known fact, that the diseased condition of the mouth is a common cause of disease in the stomach.

But this is not all: persons who are habitually dyspeptic are more liable to neuralgia than others. The general debility of the system, and the irritable condition of the nerves, which disease of the stomach, sooner or later, is sure to produce, strongly predispose the patient to nervous disease, and it requires only some local irritant to concentrate this increased irritability at some particular point, in order to develop the most tormenting neuralgia.

Thus it is evident, that the diseased condition of the mouth may act in a *double* capacity in the production of these pains. It first produces dyspepsia, which induces a strong predisposition to them, and then furnishes the local irritant to call them into action.

2d. *Through the brain and general nervous system.*—The influence of great mental excitement from close application to study. Unusual anxiety or depression of spirits in the production of neuralgia has been generally recognised by medical

writers. These acting directly on, and through the brain, occasion the disease of the nerves.

It has been observed, also, that those who are subject to hysteria, in any of its various forms, or to that vague and undefined disease or state of the system, commonly called "nervousness," are from the great irritability of the whole nervous system peculiarly subject to this disease.

If, therefore, the diseased condition of the teeth and mouth is likely to affect the brain and general nervous system, so as to produce this state of things, it is easy to understand another of the channels through which neuralgia is produced. And no one who will recollect the influence of the pain of tooth-ache, of the loss of sleep, of the deranged digestion, and the opiates and other abominable drugs which are put in the mouth to relieve the pain, will, for a moment, doubt that both brain and nerves are thus affected by the diseased condition of the teeth.

In view of all these facts, it does not seem strange to me that the fifth pair of nerves in some of its branches is more frequently the seat of neuralgia than all the other nerves combined.

Dental irritation is often both the predisposing and the exciting cause, and even when the *predisposition* arises from some *other* source—as is often the case—the local irritant which excites and determines the position of the pain is found in the mouth.

But dental neuralgia is by no means confined to the fifth pair of nerves and its branches. The condition of the mouth is sometimes such as to produce that state of the nervous system most favorable to the development of the disease; while for the same reason the pain is located in a distant part.

Dr. Fuller says, "He has twice extracted teeth when the most severe pain was in the elbow. In both instances it was one of the large grinders in the lower jaw; and in both the pain in the elbow vanished on removing the teeth." Dr. Koecker (if I remember right) mentions a similar case.

Dr. Bell says, "It not unfrequently happens that parts the most remote become the apparent seat of pain, from the expos-

ure of the nerves of a tooth. I have seen this occur, not only in the face, over the scalp, in the ear, or underneath the lower jaw, but down the neck, over the shoulder, and along the whole length of the arm."

Dr. Rush mentions a case of rheumatism in the hip, (which was, I have no doubt, neuralgic pain,) which he cured by the extraction of a diseased tooth.

Dr. Fitch describes a case in which the pain extended down the arm, and even to the ends of the fingers.

Sometime during the summer of 1846, I was requested by her physician to see Mrs. R——, of Tennessee. She was about forty-five years of age, and had in early life possessed a fine constitution. For some ten years, however, she had suffered from what some of her physicians had called rheumatic pains, affecting the right side of the neck—the right arm, and at one time, the whole of the right side of the body. The physician who was in attendance at the time I speak of regarded it as a case of neuralgia, caused by the pressure of a large goiter, which disfigured her neck upon the cervical nerves, until while listening to one of my lectures he was struck with the probability of its being a case of dental neuralgia, and immediately desired my opinion and advice.

When I saw her I learned that she could not get out of the bed without assistance—she had a distressing cough—suffered greatly from dyspepsia, was greatly emaciated, and had been confined to the house much of the time to her bed for five years.

With the assistance of two persons I got her placed in a chair, and bolstered about with pillows to support her while I could make an examination of her mouth. I found her teeth in a dreadful condition. In two, the pulp was exposed, some were dead, though little decayed, others had lost their crowns. The gums were greatly inflamed. The sockets of nearly all the teeth were suppurating, some of the teeth were loose and all were more or less covered with tartar.

I assured her that I had no doubt of being able to relieve at least the most distressing symptoms of her disease, and that I might probably effect a permanent cure if she would allow me to restore her mouth to a healthy condition.

She promptly consented to this, and I extracted four teeth before removing her from the chair. She then appeared to be exhausted, and was replaced on her bed. About two hours afterwards I had her placed in the chair again, and extracted four more.

The next day I found her free from pain and stronger. She was able to sit up while I removed the tartar from about her remaining teeth. In three days she was able to walk without assistance into another room, when I extracted several more. I directed the use of a gently stimulating and astringent wash, and promised to see her again in two weeks and complete as far as practicable, what was to be done for her mouth.

Feeling anxious about the case, however, I called in about ten days to see how it was progressing. To my surprise, I learned that she considered herself quite well, and had gone fifteen miles into the country to visit a relation.

In consequence of this imprudence, she suffered a slight relapse, but in a few months, not only had the pains in her neck, side and arm entirely disappeared, but her general health and strength was almost wholly restored. I met with her physician last winter, and he informed me that she still continues well and attends, without inconvenience, to the cares of a very large family.

Diagnosis.

How is dental neuralgia to be distinguished from neuralgia which has its origin in general causes, or in other local irritation? It is not easy to answer this question by any definite or invariable rule.

The locality of the pain is not a distinguishing sign; for not only is neuralgia of the head and face, but also of the neck, side, hip and arm, (as we have seen,) sometimes dependent on the teeth, and more than this, it occasionally happens that the pain is felt in the teeth themselves, when the cause is in some other part.

A young gentleman applied to me in 1837, to extract one of

his lower large grinders, which he said was the seat of the most tormenting tooth-ache. I made a careful examination of the tooth, and found in it no sign of disease. Indeed, *all* his teeth in both jaws were perfectly sound and remarkably beautiful. There was not the slightest evidence of disease in any part of the mouth except this pain.

On inquiry, I learned that he had been subject to chills and fever for several weeks previous to the attack of tooth-ache, and that the paroxysm of tooth-ache came on every day about the same time, at which he used to have the chill. Here was evidently a case of neuralgia of the *dental nerves* from a general cause. It would have been worse than folly to sacrifice the teeth. I ordered a cathartic to be taken that night, and full doses of quinine the following day. On the second day afterwards I had the satisfaction to learn that his tooth-ache was cured. It did not return, and he had still his mouth full of beautiful teeth, which might all have been extracted without relief to the pain.

I know of a case of neuralgia affecting the abdominal viscera from a similar cause. It had been mistaken for bilious colic by the patient and his medical attendant. It came on regularly every fourteen days for several months, and its regularity of return did not attract the attention of any one until in looking over his account in the doctor's book one day, I chanced to observe the peculiar regularity in the intervals of his visits, and suggested to him that it might be a case of miasmatic disease. He was struck with the idea, and immediately visited the patient and put him on the use of quinine. I learned from him afterwards, that he had no more of the "colic."

As the irritation of the dental nerves is often reflected upon the other branches of the fifth pair, so irritation of other branches is sometimes reflected back upon the teeth :

Dr. John McCalla, in the Journal for July, 1848, relates a case which furnishes an admirable illustration of this truth.

Miss S. D. had been subject to neuralgia in the lower jaw for two years. Having some defective teeth on the painful side of her face, they were removed with temporary relief. She

was subsequently treated with tonics, and among others, she took arsenic, which lessened the duration but not the regularity of the pain.

On combing her hair she discovered a tender spot, which, when pressed rather sharply, gave her one of the severest attacks of pain in the jaw. On examination, a tumor was found about the size of a horse bean, situated on the parietal bone. Pressure was again repeatedly tried and always produced the same severe pain. The tumor was removed with permanent relief and speedy return to health.

Dr. Darwin says, in his Zoonomia, that whenever he has found neuralgia on the side of the head, confined to a spot near the centre of the parietal bone, it has always been connected with disease of the lower grinders. If this be a general rule, it will afford a valuable sign in the few cases in which the pain is confined to that locality. These, however, make but a very small part of the whole.

Periodicity of the Paroxysms is not a Distinguishing Sign.

It has commonly been taught, that in those cases which depend on *general* causes, the paroxysms of pain are regularly periodical, while, in those dependant on the teeth, or other *local* causes, they return at irregular intervals or are almost continuous.

This distinction is made, I think, on the authority of Mr. Bell, and has been commonly recognized by other writers. I have not found it to be true. In my experience this sign has proved of little or no value.

In 1847, Mrs. ——— of Adams county, Miss., called at my office. She had suffered for some five months with a most excruciating pain which occupied a spot about an inch in diameter in the right temple. *It returned regularly every night about nine o'clock*, and continued about two hours, when it gradually wore off and she was able to sleep. She was then free from pain until the *same time* next day. Her general health was tolerably good, though she was slightly dyspeptic, and suffered somewhat from "nervousness."

As the pain had been *regularly periodical*, her medical advisers, (and she had consulted several of the most eminent physicians in the state,) considered it as having a constitutional origin, and had prescribed for her a variety of remedies which she had taken without the slightest permanent benefit.

Most of her teeth were sound and apparently healthy. She had, however, lost the crown of one and suspecting the remaining root as the cause of her suffering, she desired to have it extracted. This was accordingly done, and I expressed a hope that she might not suffer any more, but desired her, if the paroxysm should return as usual, to call again and let me examine her mouth more carefully.

She called again after three days and informed me that she discovered no change, either in the time or severity of the attacks of pain. I placed her in proper position in my operating chair, and with the necessary mirrors and instruments commenced a careful and thorough examination of every part of her mouth, tooth by tooth. I found no decay or other disease of any consequence in the lower jaw, but, in examining the upper teeth, I found one which was deeply decayed very near to the gum. When the point of the instrument passed into the cavity and touched the exposed nerve, she sprang up and placed her hand on the side of her head, exclaiming, "there is the pain now." She did not even then feel it so much in the tooth as in the temple.

It was on some account peculiarly desirable to preserve this tooth, and I proposed to make an effort to do so, informing my patient that I hardly hoped for success; but if I failed, she would only lose the tooth after I had tried.

I put in the cavity a preparation to destroy the vitality of the pulp, and desired her to call again in three days. She did so, and informed me that she had no pain that night, nor afterwards. At a proper time I plugged the tooth with gold. I saw her again more than a year after this operation. The tooth was still sound, healthy and useful, *and she had never had the slightest return of the neuralgia in the temple.*

John Hunter relates the following case, in which the parox

ysms were regularly periodical, yet dental irritation was certainly the cause of the pain.

A lady about twenty-six years of age, was attacked with a violent pain in the left side of the face, *it was regularly periodical, coming on about six o'clock every evening.* She took Peruvian bark, which had no effect, she took antimonials and Dover powders, which were equally ineffectual. But one of the points of the wisdom tooth of the upper jaw coming through, showed the cause, and indicated the remedy. The gums were lanced and the pain ceased.

Dr. Darwin says, "A remarkable circumstance attends this kind of hemicrania, viz. that it recurs by *periods* like those of intermittent fever, *and that even when a decaying tooth is the cause* as is evinced by the cure of the disease by the extraction of the tooth.

It will be found in practice, that cases which are at first irregular, frequently become periodical while those which were at first periodical, sometimes (though more rarely) cease to be so. It is well known that in miasmatic districts there is a tendency in all chronic diseases to assume a periodic type, and it is probable that this circumstance may explain the periodic character of many cases of neuralgia, let the original cause have been what it may.

The following case from Mr. James Robinson's admirable work on the teeth is so perfectly coincident with what I have frequently observed, that I cannot forbear to quote it:

"We were consulted by a lady about twenty two years of age, who for eight months had suffered pain in the branches of the maxillary nerves, superior and inferior, which pain *at first* came on in irregular paroxysms, but had latterly become *distinctly periodical*, invariably commencing at nine o'clock, A. M., and seven, P. M. The severe character of the attacks generally lasted about an hour. They seldom occurred at any other time than those specified, unless the patient was suffering from indisposition or mental disquietude.

Early during her sufferings, she was persuaded to apply salt and brandy, with mustard poultices, &c. but these had no good effect.

She then consulted an eminent physician, who ordered various preparations of iron, combined with quinine, which medicines were continued for two months without the slightest relief.

Belladonna was next tried, commencing with a grain, night and morning, an hour before the paroxysms came on. Leeches and blisters were applied to the temples, and fomentations of poppies and chamomile, and the belladonna was increased to three grains, twice a day.

She now became so much affected with vertigo and dimness of sight, [the effect of the belladonna,] that this treatment was discontinued, and iodide of potassium was substituted, with the internal use of veratrine.

These measures were pursued unsuccessfully for six weeks, when it was suggested by a medical friend, that the disease *possibly originated with a diseased tooth*, and under this suggestion we were consulted.

On examination, it was found that all the grinders in the lower jaw, and two in the upper jaw, were carious. It was very evident that this mass of caries was producing great irritation in the surrounding structures. When the diseased teeth were sounded with a steel instrument, the paroxysm of pain occurred with its usual violence.

We immediately removed the diseased teeth from the lower jaw, and ordered the following: acetate of morphia, one-fourth of a grain; camphor mixture, half an ounce; to be taken as a draught. Also the following aperient: extract of colycinth, six grains; calomel, two grains; to be taken at bed-time.

These measures produced considerable relief, and in the course of a week she had the other diseased teeth removed.

A few months since, we had the satisfaction of hearing that she was quite recovered, and *had not experienced a moment's uneasiness in the jaw since the last operation.*

From such cases as these, to which I might add several more from my own observations, I am satisfied that the periodicity or non-periodicity of the poroxysms is not a sign which can be at all relied upon, to distinguish dental neuralgia from neuralgia originating in other sources; for, although it is undoubtedly

true, that those few cases that originate entirely from the influence of marsh miasma are distinctly periodical, yet it is also true, that neuralgia from dental irritation is, in many cases, equally regular in the recurrence of the paroxysms of pain.

I have dwelt longer upon this point than I should have done, but for my anxiety to set aside a rule in practice which is not sustained by facts, and the adoption of which has led to so much malpractice.

How, then, shall we distinguish these cases? Something may be learned from the influence of remedies. If the disease have originated from the influence of miasma, it will be probably cured by the proper use of tonics. If it have arisen from some general disease of the nervous system, or some disorder of the liver or stomach or brain, it will probably be relieved by remedies addressed to these organs. But it must not be forgotten that the disease of the stomach, liver, spine or brain may itself depend on the condition of the mouth; and the restoration of the teeth and gums to health, may consequently be as necessary to the final and perfect cure of the neuralgia, as though dental irritation had been *more directly* the cause. And it is important to remember, also, that these general diseases often produce only predisposition to the neuralgia, by causing an irritable and excitable condition of the nervous system, which the dental irritation concentrates and develops into an active neuralgia. And, therefore, although we may see the apparent cause of the disorder in these general derangements, it does not follow that the diseased condition of the mouth is not also concerned in them.

The following case will illustrate my meaning:

Mrs. B——, aged about thirty, of delicate constitution and nervous temperament, in consequence of great mental excitement during her pregnancy, became subject to an affection of the uterus, which caused the loss of her general health. She became subjeet to convulsions, almost epileptic in their character, and a variety of nervous affections. She was, when I first saw her, suffering from dyspepsia, and chronic disease of the liver. Her mind was mnch impaired, her eyesight dim, her

skin sallow and parchment-like, and her whole appearance indicated a very great derangement of the vital functions.

The whole right side of the head and face was subject to the most severe attacks of neuralgia. The pain was sudden and sharp, shooting along the nerves, and often attended by spasms of the muscles on that side of the face.

The uterine affection was at length cured, or so greatly relieved as to cause her but little trouble, and a very great improvement in her general health was the consequence. The neuralgia, however, still continued. It was not quite so severe, but the attacks were as frequent as before. A great variety of remedies had been employed for it, without affording the slightest permanent relief.

By advice of her physician, she had applied to a dentist to restore her mouth to health. He operated extensively upon her teeth, (which were very bad,) but she was rendered much worse by his interference, and had consequently given up all hope from this source.

Some time afterwards she was very reluctantly induced, by the earnest request of her physician and some of her friends, who had derived advantage from my services, to place herself under my care. When I first saw her, I was not allowed to examine her mouth. When I did so, I found it in a most dreadful condition. There were only four or five teeth in each jaw that could be preserved at all. Her gums were in a state of obstinate inflammation, which had evidently been much increased by the previous dental treatment, by which several teeth had been cut off or broken, and the roots left in the jaw.

I extracted twelve teeth and roots, and directed proper applications to the diseased gums. By this treatment, the paroxysms of pain were, in a few days, greatly diminished, both in severity and frequency; but shooting pains and slight spasms continued for several months, until after artificial teeth had been inserted to supply the place of those she had lost, and enable her to masticate her food.

Then, as her stomach gradually resumed its healthful action, her nervous system acquired new vigor, and the neuralgia, with the spasms of the face, entirely disappeared.

In this case, it is probable that the *original* cause of the neuralgia was the uterine disturbance; but when once the nervous system had become debilitated, the diseased condition of the teeth, and consequent derangement of the functions of the stomach and liver, were sufficient to keep up the disorder and prevent the cure of the disease, even though the original cause of it had been removed.

The general rule of diagnosis, which in practice will be found most certain, simple and safe, is to regard every case of neuralgia as having a dental origin, if there be any thing in the condition of the mouth which could produce it. In every case of neuralgia, especially those in which the head and face are the seat of disease, to examine *carefully* into the condition of the teeth and mouth. This examination, to be of any value, must be a thorough one. It is not enough to open the mouth and look into it, nor is it sufficient to "sound each tooth by striking it with a silver spoon," as recommeded by Dr. Darwin, though that is more than doctors have generally done.

The patient should be placed in a convenient chair, his head thrown back, so as to admit the light freely to every part of the mouth. The examiner should be provided with a suitable mirror, to reflect the posterior surfaces of the teeth, and a variety of small, variously curved instruments, to enable him to touch *every part of each tooth.* Then, beginning at some one place, he should take tooth by tooth, examining each one carefully in every part of it, and so pass round to the place of beginning.

His object in this examination will be:

1st. To find if in any tooth there be an exposed nerve.

2d. If any have lost their vitality, and have thus become a foreign substance in the mouth.

3d. If any be elongated or thrown partly out of its socket.

4th. If there be inflammation of the membrane lining the socket or covering the root.

5th. If there be alveolar abscess.

6th. If there be exostosis or bony enlargement of the fang.

7th. If any tooth be loose in its socket, from absorption of its alveolus.

8th. If there be any deposit of tartar or salivary calculi around the edges of the gum.

9th. If the gums are suppurating or inflamed.

10th. If any tooth be sensitive to the touch around its neck or on any part of its surface.

Such an examination cannot be made in a moment. It requires time, caution and skill. It should, if possible, be made by an educated and experienced dentist, who is familiar with the instrument to be employed, and with the ordinary appearances presented by the teeth and gums in health and in disease.

If all the parts thus examined, are found to be healthy, it will be rendered almost certain that the real seat of the neuralgia is not in the mouth, even though the teeth themselves should be the seat of pain.

Should one or more teeth be found diseased in some of the ways mentioned above, it would not follow of course that this is the cause of the neuralgia, but it would make it proper to adopt such treatment as would restore the mouth to health as a *probable* means of relief.

If, however, on touching any tooth, the pain is felt to extend at once to the seat of suffering. If the neuralgia be excited by striking any one with a steel instrument, or if the patient can distinctly trace the beginnings of the pain to any tooth, it would render it almost certain that the disease had a dental origin, and that it will only be permanently cured by the removal of its cause.

The only satisfactory evidence that it is *not* of dental origin would be the discovery of *some other evident and sufficient cause* or the restoration of the mouth to health without relief to the neuralgic suffering. The partial relief that is sometimes gained by the use of tonics, narcotics or other remedies addressed to the general system, is no evidence that the pain does not wholly or in part depend on the condition of the mouth, since I have often seen the most marked *temporary* benefit from such means when the event proved, beyond a doubt, that the case was of dental origin.

Treatment of Dental Neuralgia.

The treatment of this affection may be gathered from what has been already said.

The great thing to be done is to get rid of the cause. *The mouth must be restored to health.* Every tooth that cannot be made healthy must be removed. Every dead tooth, every old root, and ordinarily, every loose tooth must be extracted. The gums must be restored. Every particle of tartar must be removed and proper powders and washes employed to secure the cleanliness of the teeth and the health of the gums. These things are essential. They must not be left undone. But in the meantime, I do not advise the neglect of all other means. The general condition of the health must be carefully regarded. If there be uterine, or bilious, or dyspeptic symptoms, they must be met by appropriate remedies. If the paroxysms return at regular intervals, much temporary advantage may be gained by the use of tonics, even though the true seat of irritation be in the mouth. In doubtful cases let every thing else be done which skill or science can suggest, but let not the restoration of the mouth be left undone.

This can certainly do no harm. The teeth which must be lost, are commonly of no value. The pain of extracting them is a mere trifle, compared with what the patient undergoes in every paroxysm; and even if the neuralgia be not relieved by their removal, the health of the mouth, the stomach, the lungs and the whole nervous system requires it. If it were an arm or a finger, or even a sound, healthy and useful tooth that must be sacrificed, the case would be different. But this is not needful. As a general thing, no teeth need be lost that ought not to be promptly removed, even if there were no neuralgia in the case.

Why then should the patient suffer month after month and year after year, spending hundreds of dollars with physicians and for nostrums, when a little temporary pain, sometimes the extraction of a single tooth, will effect not only temporary relief, but a perfect and permanent cure?

ARTICLE II.

Relation between the Dental Organs and the Uterus. By Prof. W. R. Handy, M. D.

The fact is well known to all physiologists, and incontestible, that the human body is a unit—that notwithstanding its great variety of parts, all these parts nevertheless act for the common good of the whole, and the whole, in turn, for the separate good of each.

By this mutual relationship, there is consequently established a reciprocal interest, and relative dependency, among the whole and the several parts—and this dependency is so close, that no one part can suffer to any great extent without eliciting in a greater or less degree the sympathy of the whole. And further, the conjoint, though it may be the unperceived actions of the whole for the restoration of the suffering part.

Now this mutual fellow feeling of the whole, and the several parts constituting one common brotherhood, when looked at in its physiological state, presents every thing moving on in such perfect harmony and regularity in the whole body, as well as its different parts, that the attention is seldom called to this dependency, which has just been stated to exist among the different organs. And it is only when this harmony is disturbed and when disease brings discord in this happy family of members, that we find the attention at all roused to the closeness of this dependency which exists among the several organs, and man himself made conscious that he embodies within his own being, a republic of sympathising suffering, and dependent parts—for the suffering member immediately sounds its tale of distress, and the whole family of organs at once take the alarm, and if we be allowed the expression, hold council together, and without waste of time speedily act, and haste to the relief of their suffering brother.

Now the amount of sympathy manifested, or danger threatened as reported by the constitutional disturbance, as a general

law, is in proportion to the relative importance of the suffering organ in the general economy. And in compliance with this law the relief sent, or the amount of interest and sympathy manifested on the part of the community of organs, bears also the same proportion. As for instance, it is well known that disease or injury of one of the vital organs, viz. the brain, the heart or lungs, is a much more serious and grave matter than disease or injury to any other organ, for in the first case, we have reason to apprehend the most alarming symptoms, threatening the very citadel of life and its overthrow; while in the latter, as a general rule, we may look to a certain and safe restoration. With this brief statement of general principles, in reference to the dependency of the whole body and its several organs, we come more directly to the subject matter in hand, which is to inquire a little more particularly into the *special relation* of one of these organs with another, viz. that of the *teeth with the uterus.* And the few remarks we have to offer, will be more in the shape of interrogatories, directed to the attention of practical and scientific dentists, as well as physicians, eliciting their personal observations and reflections in the matter, than from any thing that the writer has to offer or can lay claim to, either as settled or conclusive.

In the first place, why, and how is it, that the teeth should sympathise with the womb both in the single as well as the married state? in the absence as well as in the presence of pregnancy? Is such sympathy physiological or pathological? If the former, how does it square with the general law which asserts, that in the state of health all the organs act in such perfect harmony, that the mind takes no cognizance, and is not at all aware, of their several movements? If the latter, that is pathological, why is it not right to interfere and arrest the diseased action? And further, whether this state of sympathy be healthy or diseased, are there any observations either past or present of a practical nature, likely to result in a more improved practice for the comfort and benefit of the female?

In reference to the first query, it may be stated that as to the why and how of the sympathy of the teeth with the uterus, that the

answer is as readily given, and the explanation as easily understood, as in the familiar cases of trismus and hydrophobia. We do not think the cases exactly analogous, for in that of trismus, the locked-jaw is most generally the result of injury, while hydrophobia is caused by the introduction of poison into the system, both affections arising from a pathological state, peculiar and inexplicable it may be, but is, nevertheless, pathological and must certainly consist in such an altered condition from the natural healthy character of the injured part or organ, as to produce the peculiar symptoms belonging to each affection. But in the case of the teeth and uterus there seems to be no disease in either the one or the other. It is true the female may have the most violent tooth-ache, yet, on examination, the dentist pronounces nothing to be the matter with the teeth and that they are all perfectly sound. And for the uterus no complaint has been made in reference to it, and the general health seems in every respect to be good. In the unmarried female, this pain of the teeth seems to be present and most especially connected with the period of menstruation, while in the married it is felt most during pregnancy, and that this peculiar tooth-ache is associated with the uterus in preference to every other organ, seems manifest from the fact, that there is no such complaint either before menstruation has appeared or after it has ceased.

Now, it is admitted by all physiologists that both menstruation and pregnancy are healthy actions, and if so, how should they produce an unhealthy action, such as pain in any part? and more especially in a part so distant as the teeth? If it be denied that the menstruation and pregnancy (when this pain of the teeth is complained of) are entirely healthy, the question then recurs, viz. what is the pathological condition? Is it a change of function or structure in the uterus? are the nerves or blood vessels diseased? and if so, what is the character of their derangement? or is it the molecular or nutrition of the womb that is affected? and if one or more of these diseased conditions should be present, what special relation have they with the teeth, that the latter should sympathise with, and report the existence of such a state of things in preference to the mama

or any of the group of organs so intimately connected with the uterus and comprising the genital system? Now it is well known that all diseases of the uterus do not give pain in the teeth, nor that every pain of a tooth by any means depends on disease of the womb. Well, how are we to diagnose the character of the pain? or is there any method or utility in making any discrimination?

Acid fluids of the mouth, or disordered digestion, as well as disease of the uterus, may all give rise to pain of the teeth. And in the two first cases, a treatment would be recommended and applied, not to the teeth themselves, but to the removal of the causes on which the pain depends; in the one case to the correction of the acrid qualities of the fluids of the mouth, and in the other, to the restoration of the disordered digestion of the stomach. If treatment be acknowledged as necessary in these two cases to remove this painful sympathy of the teeth, why is it not equally necessary when the uterus is the cause, and command an equal amount of attention both on the part of the patient and physician? Is it because there is greater difficulty in detecting disorders of the uterus, and tracing their effects upon other and distant organs? or is it because there has been less attention given to this species of relationship, and that cause and effect between the teeth and the uterus have not been so industriously looked after, or so carefully watched, as in other cases of sympathetic action? This latter reason we suspect to be the true one, and if so, the course to be pursued by every medical man and scientific dentist seems to be, to give closer observation into the various sympathies of the uterus with distant organs; and endeavor to ascertain what the precise change from the healthy condition of the uterus consists in. Whether this change refers to an alteration in the structure or function, or both of these organs. In other words, what constitutes the exact pathological state, if it be such, of the uterus upon which those very peculiar and remote symptoms depend? If such discrimination be possible, we shall then be furnished with an intelligible data upon which to predicate a rational practice—a practice so reliable that we will know whether it is

best to do nothing, or whether, on the contrary, it is best to promptly interfere. One word more, in reference to the first query, of "why and how" the uterus should sympathise with the teeth? and we close these rather desultory remarks. When the question is asked, why and how is it, that an organ sympathises with some one in preference to another? we look for the answer, and reply, that it is owing either to its contiguity, or is concerned in the performance of the same function, and hence indicating the closest fellowship and most intimate relation. But there may be neither this contiguity nor especial participation in function, and yet a very close connection by nerves, as we see between the brain and the stomach, by means of the par vagum, which passes directly from the one organ to the other; and so close is this connection, that injury to the brain, or distressing news, it is well known, not only may, but frequently does, produce loathing of the food and vomiting; and *vice versa*, disorder of the stomach is reflected to and disturbs the brain.

But in the case of the teeth and the uterus, there is no such relation between them, either by contiguity, by direct intercourse through nerves, or by any special connection in the performance of function; yet it is manifest there must be a relationship, through some channel or other, to explain the presence of symptoms, which clearly flow as cause and effect, and as clearly point to the dependency which evidently exists between these two sets of organs.

Then the question is, what is this channel of intercourse? A man has locked-jaw from injury of the toe, a sympathy even more remote, and quite as obscure as that of the teeth and the uterus, and no one questions this relationship—but how does it exist? Now, our own opinion is, that the medium of connection is the same in both cases, and that the sentient tract of the spinal marrow is this medium. In the one case, the sentient nerves of the uterus, being impressed by the changes occurring in this organ at the periods of menstruation and pregnancy, reflect this impression to the sentient tract of the spinal marrow, whence it is conducted upwards, along this tract, to the point

where the fifth pair of nerves pass off; and here it takes the route of this nerve—the great sentient nerve of the teeth and the face—going along the dental branches where there is pain in the teeth, and, by a reflex action, to the muscles of the lower jaw, in the case of *trismus*, where the impression from the sentient nerves of the toe are also reflected to the spinal marrow.

ARTICLE III.

Observations on the Ætiology and Pathology of Odontatrophia.

By CHAPIN A. HARRIS, M. D.

To the peculiar affection of the teeth on which we at this time propose offering a few remarks, M. Duval, a French dentist, and author of some celebrity, has applied the term atrophy. But the strict applicability of the term, as the two principal varieties of the affection consist rather in a congenital defect, most frequently, of some portion of the enamel of two or more of the teeth, than wasting, from want of nourishment, of any of the dental tissues, may, perhaps, be considered as somewhat questionable. And this would seem to be rendered still more so by the fact, that neither of the varieties to which we have referred, occurs subsequently to the formation of the enamel. But as the congenital form of the disease is evidently the result of altered function in a portion of one or more of the formative organs, if not of absolute degeneration, from vicious nutrition, we are disposed to regard the term as the most applicable of any that can be applied to it.

The occurrence of odontatrophia is less frequent than any other disease to which the teeth are liable, and as the progress of the affection usually ceases with the termination of the causes concerned in its production, it has scarcely been deemed of sufficient importance to merit serious consideration. Hence,

neither its ætiology nor pathology has been very carefully investigated. Indeed, most writers upon the diseases of the teeth have overlooked the affection altogether, while a few have only merely alluded to it, without describing the characteristics even of its principal varieties, and although we have treated of it in another place, the limits to which we there felt ourself restricted, did not admit of a very full discussion of the subject.* Whether we shall now be able to throw any additional light upon it, or establish the correctness of any opinions already advanced, or not, we shall leave to others to determine.

In the formation of the enamel, Mr. Fox speaks of a defect, sometimes met with in its organization, characterized by a "yellow color," and of "a great number of indentations upon its surface," giving to the teeth the appearance of "the exterior of a sponge," which he termed "honey-combed." He refers these defects to a deviation from the natural action of the membrane which secretes the enamel, and dependent upon some "peculiarity of constitution," during the first months of infancy. He thinks it is liable to occur in several children of the same family, and that teeth thus affected are less liable to decay than those which have beautiful and transparent enamel.†

M. Delabarre, an ingenious physiologist, and for the most part, a close and very accurate observer, has, probably, approached nearer a correct explanation of the true cause of dental atrophy than any other writer. But he has evidently confounded one of the varieties of the affection with erosion—a disease characterized by essentially different phenomena, and produced by different causes. He restricts the term to the variety which consists simply of discoloration and absence of a portion of the enamel. In the former cases he believes it may be congenital or accidental, but in the latter, he thinks it is always congenital. He confounds the variety which consists of perforations in the enamel with erosion.‡ But, so distinctly

* Vide Principles and Practice of Dental Surgery, p. 337, 4th ed.

† Natural History and Diseases of the Human Teeth; American edition, pages, 57, 8 and 9.

‡ Traitè de la Seconde Dentition, pp. 20, 1, 2 and 3.

marked are the peculiarities of each, there is no necessity for confounding the one with the other.

The opinion of M. Delabarre with regard to the cause of dental atrophy, is founded upon the supposition, that the doctrine of the formation of the enamel as maintained by Hunter, Jourdain, Fox and Cuvier, is erroneous, and that this portion of a tooth is formed from an immense number of exhalents which cover the crown, forming a "sort of imperceptible velvet."* These he regards as integral parts of the tooth, and believing the enamel fibres to be secreted by them, he ascribes the affection under consideration to their vicious development or imperfect nutrition.

Lefoulon adopts the views and almost the precise language of Delabarre, in the description which he gives of atrophy of the teeth. Maury treats of both it and erosion as being one and the same disease. But in describing atrophy he notices the distinctive peculiarities by which each affection is characterized.†

In describing the difference between erosion and atrophy, M. Delabarre says, the part atrophied is deformed and deprived of the enamel, "that the teeth are yellow and sensitive, the touch of the finger causing pain." In erosion, if the crystals of the enamel are not wholly destroyed, "the bottom of it is of a white color, and on its being touched, causes no disagreeable sensation; if, on the contrary, the crystals are destroyed down to the tooth, the part thus denuded is irritable."

In an article on erosion, Maury gives a very accurate description of several varieties of atrophy of the teeth. The first, he represents as consisting of irregular white, deep or light yellow spots, situated in the enamel of the tooth, without affecting the smoothness of its surface. The second; as characterized by little crowded holes, or irregular depressions, resemb-

* It is scarcely necessary to state that the exhalents of Delabarre, correspond exactly with the corpuscules or fibres of the enamel membrane of Raschkow.

† Traitè Complet de l'Art du Dentiste, pp. 99 and 100.

ling quilting; or as consisting of transverse sinuosities, single or divided by prominent lines, which are sometimes "yellow, but of the color of the enamel." The third variety affects the dentine as well as the enamel, reducing the dimensions of the crown of the tooth sometimes to one third of its natural size, and not unfrequently dividing it by a deep circular groove or depression.

Not one of the phenomena here described is produced by the action of corrosive agents, or is the result of chemical decomposition either of the enamel or dentine, but are manifestly dependent upon other causes. The term erosion, therefore, cannot be applied to either variety of the affection just noticed, with the least show of propriety.

Odontatrophia may very properly be divided into three varieties. Each has distinctive peculiarities which characterizes it from either of the others. Two are always congenital, and the other, although most frequently congenital, sometimes occurs subsequently to the eruption of the tooth.

Although Maury has given a better description of the three principal varieties of dental atrophy than any other writer, he has omitted some things which it will be proper to mention. But in treating of these different varieties, we shall change, somewhat, the order of the arrangement which he has laid down.

First variety. The peculiarities that distinguish this variety of atrophy from either of the others are, that it never impairs the uniformity and smoothness of the surface of the enamel, and is characterized by one or more white, or dark or light brown, irregularly shaped spots, upon the labial or buccal surface of the tooth. It occurs oftener than the third variety, and less frequently than the second. It rarely appears on more than one or two teeth in the same mouth, though several are sometimes marked by it. It is seen on the molars more frequently than the bicuspids, and much oftener on the incisors of the upper jaw than any of the other teeth. We do not recollect to have ever observed it on the cuspids of either jaw, nor on the palatine or lingual surfaces of the incisors.

The enamel is much softer on the affected than on the unaf-

fected parts of the tooth, and may be easily broken and reduced to powder with an instrument. It seems to be almost wholly deprived, in these places, of its animal constituents as well as its connection with the subjacent dentine.

The size of the atrophied spots are almost as variable as their shape, but the only bad effect produced by them, is the unpleasant aspect they sometimes give to the tooth.

As we have before remarked, this variety of atrophy is sometimes accidental, occurring subsequently to the eruption of the tooth, but in a large majority of the cases it is congenital. It is rarely seen on a temporary tooth. In all the cases which have come under our observation it was confined to the teeth of second dentition.

Second variety. This may be very properly denominated *perforating* or *pitting* atrophy, as it gives to the enamel an indented or pitted appearance, the irregular depressions or holes extend transversely across and around the tooth. They are sometimes more or less distinctly separated one from another, by prominent lines; at other times they are confluent, and form an irregular horizontal groove. Sometimes they penetrate but a short distance into the enamel; at other times they extend entirely through it to the dentine. Their surface, though generally rough and irregular, usually presents a glossy and polished appearance—a peculiarity which always distinguishes this variety of the affection from erosion. The pits often have a dark brownish appearance, though sometimes they are of the color of the enamel on other parts of the tooth.

This variety of atrophy is never confined to a single tooth, Two, four, six or more corresponding teeth are always affected at the same time, in each jaw, and the corresponding teeth of the same class precisely in the same manner, and in the same place. When more than two are marked, the distance of the pits from the coronal extremities of the organs varies, according to the progress the formation of the enamel had made on each class at the time of the operation of the causes concerned in the production of the affection. For example, when the line of pits in the central incisors is situated about two lines from

their cutting edges, it will scarcely be one line from the cutting edges of the laterals, and only the points of the cuspids will be marked. When the indentations are nearer the edges of the central incisors, they will be on the edges of the laterals, and the cuspids will have entirely escaped.

Sometimes the teeth are marked with two or three rows of pits, and when this is the case, the patient has either had two or three relapses or been attacked two or three times in quick succession with different diseases capable of interrupting the progress of the formation of the enamel.

Although the incisors are more frequently marked with these indentations than any of the other teeth, the cuspids, bicuspids, and even the molars are sometimes affected with them. When the disease attacks the molars, its effects are generally located on the grinding surface. The permanent teeth are more liable to be attacked than the temporary. We have never known but one instance in which the latter were affected with the disease.

This variety of atrophy occurs oftener than either of the others, and though it sometimes gives to the teeth a very disagreeable and unsightly appearance, it rarely increases their liability to decay.

Third variety. In this variety of atrophy the whole or only a part of the crown of a tooth may be affected—the dentine being often implicated as well as the enamel. The tooth usually has a pale yellowish color, a shrivelled appearance, and is partially or wholly divested of the enamel. Sometimes the crown is not more than one-half or one third its natural size. Its sensibility is usually very greatly increased, and its susceptibility to pain from external impressions is most wonderfully excited by acids. It is also more liable than the other teeth to be attacked by caries. The root of the tooth, though rarely, is nevertheless sometimes affected, and presents an irregular knotted appearance.

The disease is often confined to a single tooth, but it more frequently shows itself on two corresponding teeth in the same jaw. According to our observation, the bicuspids are more

liable to be attacked than any of the other teeth. The temporary teeth are rarely affected with it.

This variety of atrophy occurs less frequently than either of the others, and although it increases the liability of the affected organs to decay, they sometimes escape its attacks to an advanced period of life.

In the description which we have given of the three varieties of dental atrophy, we may have omitted to mention some of the peculiarities belonging to each, but we believe we have pointed out their principal characteristics with sufficient accuracy to enable almost any one to distinguish one from another, and either from erosion. We shall, therefore, conclude our remarks upon this subject with a few observations on the ætiology of each variety of the disease.

The first variety is evidently produced by some cause capable either of preventing or destroying the bond of union between the enamel and subjacent dentine, but what that cause always is, is a question which it may be difficult to answer. Subsequently to the eruption of the teeth, it may be occasioned by mechanical violence, but we have never known but one case in which it had resulted from this cause. The subject of this was a boy about ten or eleven years of age; he accidentally fell while running, and struck the right central incisor against a sharp angle of a rock. The tooth was nearly displaced, and remained sore and sensitive to the touch for several weeks. Ultimately a small white spot developed itself on the labial surface of the organ.

Now, whether the bond of union between this portion of the enamel and the subjacent dentine was immediately destroyed by the concussion of the blow, or whether it resulted from subsequent inflammation and the death of the intermediary membrane, is a question we do not feel ourself able to answer. If it were destroyed at once by the blow, one would be led to suppose that the change in the color of the enamel would have been observed immediately, but this may have resulted from some subsequent change or alteration in the animal constituents of this part of the enamel, which followed as a consequence

of the injury produced by the violence of the blow. These are questions, however, which the present state of our knowledge does not enable us to solve. But that the white spot in this case resulted as a consequence of the blow, there cannot be the least shadow ofdoubt.

But when the affection is congenital, as it almost always is, it is dependent upon some other cause, possibly upon disease in the pulp, or intermediary membrane, which constitutes the bond of union between the dentine and enamel, subsequently to the formation of the latter. But what the determining cause of the disease in these parts, is, if the affection be produced in this way, whether simple local irritation, or general constitutional disturbance, we are not prepared to say. One would be likely to suppose, if the atrophied spots were occasioned by disease of the pulp or intermediary membrane, the morbid action would scarcely confine itself to such narrow and circumscribed limits. But, whether the destruction of the intermediary membrane of the affected part results as a consequence of actual disease, or merely from vicious nutrition, or whether from some unknown cause, it has failed to be developed here, it is certain that the fibres of this portion of the enamel are not united to the subjacent dentine; and, not receiving a supply of nutrient fluid or vital principle, their animal frame-work partially or wholly perishes, leaving but little more than their inorganic constituents.

The cause of this variety of congenital atrophy, it must be confessed, is very obscure; and in the absence of positive knowledge, we can only infer it from the nature of the affection. If it does not result from one or other of the above mentioned causes, it is difficult to imagine in what way it is produced.

The cause of the second variety of odontatrophia is, we think, susceptible of a more satisfactory explanation. The formative organ of the enamel, as is now generally admitted, consists of a membrane, composed almost wholly of short hexangular corpuscules or fibres, which correspond in shape and arrangement with the fibres of the enamel. This membrane is accurately moulded to the crown of the tooth, and according to

Raschkow, each fibre is a secretory duct, whose peculiar function it is to secrete the fibre of the enamel corresponding to it. It should also be borne in mind that the secretion of the earthy salts of the enamel commences at the coronal extremity of the tooth, and gradually proceeds towards the base of the crown. Now we can readily conceive that some constitutional disease, by interrupting the secretion of the earthy salts deposited in the enamel cells or secretory ducts of the enamel membrane, for the formation of the enamel fibres, by occurring at the time when this process is going on, might prevent them from being filled, and cause them to wither or waste away, giving to this portion of the enamel the pitted appearance which characterizes this variety of atrophy. In other words, the secretion of the inorganic constituents of the enamel being interrupted for a short time, the horizontal row of cells in the enamel membrane, into which it should be deposited, will not be filled, consequently, as we might readily suppose, they will waste away, leaving a circular row of indentations around the crown of the tooth. But as soon as the constitutional disease has run its course, the secretion of the enamel fibres will be resumed, and unless the child experiences a relapse, or has a second attack of disease capable of interrupting this secretory process, the other parts of the enamel will be well formed.

Some writers ascribe the formation of these pits in the enamel to the chemical action of a corrosive fluid, or to an acidulated condition of the fluid contained in the dental sacs, but those who have done so, have confounded the affection with erosion. Others, and with much plausibility, believe they result as a consequence of an eruptive disease during the "enameling" process, and there are many facts which go to sustain the correctness of this opinion. In seventy-one cases which we have recorded, that have come under our observation during the last eighteen years, we have endeavored to elicit all the facts which we supposed could have any connection with the origin and cause of the disease. The following is the result of our inquiries.

In thirty-eight cases, we were informed, either by the indi-

viduals themselves, or relatives, that they had had the measles, and as nearly as we could ascertain, sometime during the formation of the enamel of the teeth: in six cases, the chicken pox; in four, scarlet fever; in three catarrhal fever; in two small pox; in one the mother had had an attack of varioloid about seven or eight weeks previous to her accouchment, but in this last case, the atrophied teeth belonged to the temporary set. With regard to the other seventeen cases, we were unable to obtain any certain reliable information concerning the state of the general health during the few first years of childhood.

Although the information we obtained concerning the early history of the fifty-four cases, was not, in many instances, very precise in relation to the exact age when the diseases we have mentioned occurred, it was sufficiently so, we think, to establish their probable connection with the condition of the teeth, or rather, their agency in the production of the atrophy.

Three cases occurred in the same family in two instances, and two cases in six. How far this fact may go to establish the correctness of the opinion advanced by Mr. Fox, that several cases are liable to occur in the same family, we leave to others to decide. If eruptive diseases are more favorable to the production of this variety of atrophy than others, the correctness of it might seem to be favored by the consideration, that when one of this class of diseases occurs in a family, several of the children, where there are a number, are usually attacked about the same time; and when it happens that there are two of nearly the same age, the teeth of both would be likely to be affected, those of the youngest nearer the coronal extremity than the other. But the differences in the ages of children in the same family, would, in the majority of cases, prevent the teeth of more than one from being marked with atrophy, unless eruptive diseases should occur at different times in the family.

The cases to which we have referred, would seem to establish the fact, that although the affection is caused altogether, and by far more frequently, by eruptive, than any other form of constitutional disease, it may, nevertheless, occasionally result from other diseases.

The third variety of dental atrophy, so far as our observations upon the subject would seem to justify an opinion, always results from altered or vicious nutrition, caused by diseases of the pulp or enamel membrane, or both, during the secretion of the dentine or enamel, according as one or both are affected. We are inclined to believe that the disease in the dental pulp or enamel membrane may be produced either by local or constitutional causes, or both. But the information which we have been able to obtain concerning the state of the general health, and that of the mouth at the time of the ossification of the pulp and the secretion of the enamel, in the cases that have fallen under our observation, has not been as satisfactory as we could have wished.

In only thirteen out of nineteen cases, of which we have kept a record, were we able to elicit any information calculated to throw the least light upon the origin and cause of the affection. In five of these cases, we ascertained, upon inquiry, that the gums around the temporary teeth had been very much diseased from alveolar abscess, for about three years and a half or four years previously to the eruption of the organs of replacement, and that purulent matter had been discharged from them a great portion of this time. The subjects of three of the other cases had a severe attack of dysentery about the third year of age, and from the effects of which they did not recover for a long time. In two cases, the subjects had been badly salivated, and in consequence of which, lost two of the temporary teeth, from necrosis and exfoliation of their sockets, about the third year of age. One of these last was almost wholly deprived of enamel, of a light brown or yellow color, and but little more than half the natural size. The subjects of two of the other cases had had a severe attack of fever, about the time, as nearly as we could ascertain, of the commencement of the ossification of the atrophied teeth, and from the effects of which they did not recover for eight or ten months. The subject of the other case had had several attacks of sickness between the first and seventh year of age, which so impaired the general health, as to render its restoration a matter of great doubt, both with the parents and attending physician.

In four out of the nineteen cases, the crowns of the teeth were not much more than one-half the natural size, with scarcely a single trace of enamel on them, and three were of a light, and one of a dark brown color. They were exceedingly sensitive to the touch, and three were badly decayed in their approximal surfaces, rendering their immediate removal absolutely necessary. The portion of the dentine of these which was not affected by caries, was so soft that it could be easily cut with a knife. Their roots were feebly developed, and in other respects more or less imperfect.

The crowns of the teeth, in five of the other cases, had a shrivelled appearance, were much smaller than the natural size, with only small patches of enamel on the cusps and points of their coronal extremities, which were the only parts not preternaturally sensitive to the touch. The other parts were of a pale or dark brown color. Four of them were affected with caries in their approximal surfaces, and in two it had extended to the pulp-cavity, rendering their removal necessary.

From one-fourth to one-half of the crown, in the other ten cases, was either wholly deprived of enamel, or covered with only a very thin discolored layer, and of so soft a texture that it could have been easily scraped away with a knife or other instrument. The atrophied parts of six were affected with caries.

Eleven out of the nineteen teeth were bicuspids—eight in the lower and three in the upper jaw; one was a superior cuspidatus; three were incisors—two in the upper and one in the lower jaw; and four were molars. In eighteen of the cases, the atrophy was confined to the permanent teeth.

The circumstances which we have mentioned, as having had a probable connection with the origin and cause of the atrophy, in the thirteen cases to which we have particularly referred, would seem to warrant the conclusion, that altered function or vicious nutrition of the pulp or enamel membrane, or both, upon which the structural peculiarities or morbid phenomena presented by teeth thus affected, are dependent, is the result of either local or constitutional disease. Although we failed, in six cases, to elicit any information concerning either the state

of the general health, or the condition of the mouth, when the secretion of the earthy salts of the atrophied teeth must have been going on, it is certain that this process must have been interfered with, either by some local or constitutional disturbance.

The difficulty of obtaining a correct account of all the circumstances connected with the history of any disease, several years after its occurrence, must, when the inquiry is delayed for so long a period, prevent us from becoming sufficiently acquainted with them to determine the exact importance to which each is entitled. This has ever constituted a serious obstacle to the investigation of obscure causes of morbid phenomena; but in the examination of the affection on which we have been treating, we believe the facts we have adduced justify the inferences we have ventured to make.

Since writing the foregoing, the following interesting case of dental atrophy has fallen under our observation:

Mrs. C. called, December 16th, 1850, to consult us concerning her daughter's teeth, which, from congenital defect, presented a most unsightly appearance. The girl was between nine and ten years of age. The cutting edges of the upper central incisors were badly pitted and very rough; the corresponding teeth in the lower jaw had a transverse row of pits passing around them, about a sixteenth of an inch below their cutting extremities. Another row of pits, so close together as to form a rough groove, encircled the upper central incisors, about an eighth of an inch below the gum, and the laterals a little nearer their cutting edges; the lower incisors were similarly marked, but not quite so near the gum. The enamel, near the second transverse row of pits, and between it and the incisive extremities of the teeth, was thin, and of a light brown color. A little above the first row, on the central incisors, were two or three brown, opaque spots. The first permanent molars were also encircled with a row of indentations, about half way between their grinding surfaces and the gums.

On inquiry, we learned from the mother, that the child had a

light attack of measles when she was between eleven and twelve months old; of scarlet fever when about fifteen or sixteen months of age, and dysentery at about the twenty-first or twenty-second month.

Now, here we have the three varieties of atrophy on the same teeth, and the occurrence of constitutional disease about the time when the affected parts of the teeth must have been receiving their earthy salts, would seem to establish, very conclusively, the connection of the one with the other.

ARTICLE IV.

Application of Gutta Percha to Dental Purposes.

The peculiar properties of this remarkable substance, familiar, doubtless to all the readers of the Journal, have rendered it extremely useful in the arts, for a variety of purposes. It struck me at once, on first finding that it could so readily be softened, and again almost instantaneously rendered hard, that it might be found very useful in our own profession. I made some experiments with it, and now find it, for a great many purpoess, so useful in my practice, as to be quite unwilling to dispense with it.

My first attempts with gutta percha were to use it as a substitute for wax, in taking impressions of the mouth. I took hold of it quite sanguinely for this purpose, but was somewhat disappointed in the results obtained. The fact, that at a certain temperature it becomes quite elastic, renders it necessary that it should be kept in the mouth, in place, till it cools below this point. As this requires some time, even with the aid of ice to hasten the cooling, it renders it less convenient than wax for the purpose. Indeed, since the time I first employed it for taking impressions, some improvements have been introduced, in this city at least, (and which may be described at some future

time,) which, for partial cases, renders wax all that can be desired for the purpose. I can easily imagine, too, that if any considerable number of teeth were left in the mouth, and the gutta percha allowed to remain a little too long, it would be found extremely difficult to remove. For partial cases, I have, for these and other reasons, ceased to use it, although, from some communications in the Journal, it seems to have been been used with better success by other members of the profession. But, although I did not find it so valuable as I anticipated for the purpose here indicated, for taking impressions for an entire set, I know of nothing which will answer as a substitute.

My method of using it for this purpose is the following: An impression is taken with wax, in the usual way, and a plaster model made from the impression. From this model a gutta purcha plate, an eighth of an inch in thicknes, is made, precisely in the form intended to be given to the gold plate afterward. This is tried in the mouth, examined closely, and such parts as are not found to fit well are softened, a small portion at a time, and whilst the whole is held firmly with the left hand, the part softened is pressed against the mouth with pounded ice in the end of a napkin, held in the right hand. By going over the plate or frame in this manner, an impression may at last be obtained which will be very accurate. The ice must, of course, be held in contact with the gutta percha till the latter is perfectly hardened.

We have been making cavity plates in this city, differing both from Gilbert's plan and that of Dr. Cleaveland. We have found it to answer well—better, in our hands, than any other cavity plate. The chamber is made by cutting out a piece of the plate formed in the ordinary way, in the form intended to be given to the cavity; and the cavity is made by soldering on an additional piece, as is done in Cleaveland's plate, but without wire, or anything to give additional thickness to the edge of the cavity. I mention this manner of making cavity plates incidentally, at this time, simply to enable me to describe the manner I have fallen upon for taking the impression for making

the plate. From a plaster model, made in the usual way, after a wax impression, I get the gutta percha plate above described, and cut out from it a piece in the form intended to be given to the cavity. I then, after fitting the gutta percha plate in every other part, soften by touching it with a napkin dipped in boiling water, to a little distance from the edge of the cavity all round, and hold it in place with the ice, as above directed, till it becomes hard. The advantage of this method is very obvious: it enables you to get, with uniform certainty, a perfectly accurate impression of the part upon which, and upon which alone, the adhesion of the plate depends. It is much better than the lead plate recommended for the same purpose, for the parts which fit well cannot spring in the slightest degree whilst you are perfecting the adaptation of the other parts. Since adopting the method described, I have experienced very little trouble in getting atmospheric plates to adhere as firmly as can be desired.

In taking an impression of the lower jaw, it is simply necessary to cut out a piece of sheet gutta percha, as near the size of the mouth in hand as possible, soften and mould it to the part, trimming away, with scissors, the superabundant portions.

In my unsatisfactory trials to substitute gutta percha for wax, in taking impressions, I found it to answer so admirable a purpose as a wax-holder, that I have never, since then, used any other, when I found one of these articles desirable. Every one who has used the ordinary tin frame, knows how impossible it is to get them to answer well in all the variety of cases which present themselves, no matter how large his assortment may be. The method of using gutta percha for this purpose is exceedingly simple and easy. Take about as much gutta percha in quantity as you would use of wax for taking an impression. Soften and use it precisely as you would use wax without a frame to hold it. As soon as you remove it from the mouth, (which, in this case, may be done as soon as you obtain the impression,) enlarge it a little with your fingers, at the part corresponding to the labial portion of the gum, and stretch it upward; then throw it into cold water for a few minutes, and

you have a wax-holder perfectly adapted to the case in hand. A very small quantity of wax in this frame, will enable you to get a good impression. The advantages of gutta percha for this purpose are so very obvious, that I have no doubt it has been employed in the same way by other practitioners. If it were useful for no other purpose, I find it so convenient and advantageous for this, that I would not be without it for twenty times its cost.

In using gutta percha, exclusively, for taking impressions in partial cases, I generally proceeded as follows: After preparing the holder as you would do if wax were used, soften the requisite quantity of gutta percha, by allowing it to remain a few minutes in water kept at the boiling point, and then place it in the holder. Before putting it in the mouth, immerse it for an instant in cold water; this will prevent it from adhering to the teeth and lips, which otherwise it would be apt to do. Put it in the mouth, and press steadily and firmly against the part of which you wish to obtain the impression. Hold it steadily in place for a minute or two, then remove and place in a glass of ice water, which it will be well to have by you on your stand. Allow it to remain only long enough for the surface to be chilled, for which a minute or two will be sufficient. Then return it to its place in the mouth. This you can readily do, if you are cautious, without injury to the impression. In this way you may remove and replace it, till you are satisfied that the contraction is complete. I think it well always to observe this precaution, for, even if the patient could allow it to remain in the mouth sufficiently long for complete contraction to take place, its contraction on the teeth in some cases would render it very difficult to remove, especially where the teeth happened to be larger at the crowns than the necks. The best way that such an accident could be remedied, would be to apply, repeatedly, napkins dipped in boiling water, till the impression is sufficiently softened to be removed. I have said that I had ceased to use gutta percha for this purpose, because I had found wax more convenient; still, I am not satisfied that it might not be used with advantage, and give the result of my

experience to those who have not used it at all and may be disposed to try it. After an impression is obtained, it enables you to procure a very beautiful plaster model.

A most excellent cement for arranging teeth on the plate, so that they may be tried in the mouth before soldering, (a practice invariably pursued by me,) may be made of this useful substance. For this purpose, it is combined with resin, in the proportions: three parts resin to one of gutta percha. The resin is first melted with a gentle heat, and the gutta percha dropped into it in small pieces, when it will be found rapidly to dissolve. I have used several other compositions for this purpose, but none with the same degree of satisfaction. It adheres with great tenacity to the plate, when heated and dropped upon it; it is not at all affected by the moisture of the mouth; it can, with a low degree of heat, be so softened as to allow the teeth to be moved with ease; and when this is to be done, can be chipped away from the plate with as much ease as shellac. But it is readily made, and any one who desires an article of this kind, will soon be able to test its value.

This cement will be found valuable for another purpose. Those who practice the operation of destroying the dental pulp with arsenic, know that it is very desirable that the preparation used should be well secured in the decayed cavity, without being allowed to press upon the exposed pulp; for, when this occurs, severe pain will inevitably ensue. To accomplish this object, a number of valuable methods have been proposed; but generally the cement here described will save both time and trouble, and will perfectly answer the desired purpose. After the preparation is applied over the exposed pulp, place in the cavity, loosely, some pieces of the cement, allowing them to project above its edges; touch it with an instrument slightly heated, and it will quickly soften, and attach itself to the sides of the cavity. This will perfectly fill the cavity, and exclude every particle of moisture so well that the cotton used for applying the preparation will be found, on its removal, exactly in the same condition as when it was put in place.

A little more than a year since, I had the misfortune to sprain

the second joint of the thumb of my right hand. It is quite unnecessary to say to the readers of this Journal, that few more serious accidents could well happen to a practicing dentist. The sprain was a slight one, but the absolute necessity I was under, at the time, of using my hand almost incessantly, not only prevented it from getting well, but injured the joint so much that I was at last entirely disabled. Every one knows how tedious an affair a sprain is, even when the strained ligaments are allowed absolute rest. I could not afford to lay by a single day, and yet I could not operate at all. In this gloomy extremity, after considerable loss of time, it occurred to me, that if the joint could be supported by any means, which would not interfere with the use of the rest of my hand, I might get on tolerably well at least. I had then used gutta percha, and it occurred to me that this was just what I wanted. I went into my work-shop, moulded a piece of gutta percha to the joint, making a band around the thumb below the joint, and extending the other extremity to a point just below the joint at the wrist. Through this tongue, a hole was made for a piece of ribbon, which was tied round the wrist. The whole was covered with silk, which is easily accomplished by warming the surface of the gutta percha, and sticking the silk to it. I put it on, went to work, and have not since, from this cause, been prevented a single hour from operating. This is an accident to which, of course, every one is liable, and I thought an account of this simple mode of relief in such a case, might prove useful to some person.

I have used the substance which has formed the subject of this article for a great variety of trifling purposes, which are probably scarcely worth describing formally, but which certainly contribute very much to the conveniences of my work-shop. I am sure it will be found very useful in many ways that are scarcely suspected now, if attention is once seriously turned to it. A.

Washington, D. C.

ARTICLE V.

The Percentage System amongst Dentists.

Some few years since there appeared in one of our leading periodical publications, a very astounding and thorough exposure of the systematic frauds that prevailed among nearly all classes of tradesmen employed by the gentry and aristocracy, by the allowance to domestics, servants, of a percentage or a discount upon the amount of their master's bills. The practice was not confined to the purveyors of meat, bread, groceries, and "long sixes," but was found to prevail very extensively among the more influential and apparently respectable establishments of the West End. "Black-Mail was regularly demanded and exacted, and as a matter of course charged upon the customer's bills. The exposure, however, produced the most satisfactory results; the wholesale system of knavery was unmasked; masters and mistresses began to look after their own interests, and paid their own bills instead of entrusting their purses to the less scrupulous servant or the tender mercies of your genteel fraudulent tradesman. Could we only hope that the curious revelations we are about to make would produce an equally satisfactory and necessary reformation in another part of our social system we should deem ourselves amply repaid.

It will scarcely be credited that so mean and dishonorable a practice would be found to exist in any but the lowest and most unprincipled class of tradesmen. It will naturally be supposed that in moral and intellectual England, whose commercial integrity is recognised throughout every quarter of the globe, these sort of frauds were perpetrated merely by scheming tradesmen and mercenary valets, and that the professors of medicine and surgery would stand not only pure, but above even the shadow of suspicion. Few will believe, without satisfactory evidence, that men of education and principle, would become parties to so gross a violation of principles, and impo-

sition upon the public confidence, reposed in professional men, whatever may have been the case at the period when these domestic frauds were first made public we cannot say ; but we can assert, that of late, some very extraordinary disclosures have been made, calculated to excite just as great a sensation among the profession, as the former ones did in the regions of flunkeyism, with this unfortunate difference, that in the one case they were perpetrated by men whose character and station was little compromised by the exposure, while in the other they must tend materially to degrade a highly honorable class of men, and to shake public confidence in professional integrity, and honor. In support of our observations we submit the following very curious circular note, sent by a dentist, to a medical man, residing in the country.

George street, Hanover square, London.

SIR:—I hope you will excuse my troubling you with this communication. I am a dentist of considerable practice, but wish to extend it by the recommendation of medical men. If you will do me the favor to recommend those of your patients who require a dentist to my care, I shall be most happy to present you with a *liberal compliment* upon every case you send me. I am, &c.

That there are men in every calling, including dental surgery, who will stick at nothing to obtain their ends, we are fully aware. And whatever the profession generally may think, we are not very much surprised at the discovery of this issue of dental scrip, by speculative practitioners, which entitles parties bringing pigeons to be plucked. We have reason further to know that the speculation has been systematically carried out to a considerable extent, and that the department in which it flourishes with the greatest vigor, is that of dentistry. It is a well known fact, that we have grafted upon the dental profession, in this country, many rotten branches who have no identity with the parent stock. Men of little practice and less principle, who, while following apparently a useful and respectable calling, possess a very limited amount of either education

or character, and endeavor to compensate for their deficiencies in both by resorting to all sorts of chicanery and cunning, which they frequently bring to bear upon the public, with the most profitable results.

In every bubble company, and in every speculation, nothing is more common than to find some psuedo foreign count, or baron, who condescendingly allows his name, from purely philanthropic motives to be put forward as a director or secretary; but what are the disinterested exertions of such men to those of the dental practitioner, who having already a "considerable practice," which one would suppose required his best attention, obligingly sacrifices it from a wish to extend it, among that class of her majesty's lieges who have not yet had the benefit of his professional services; the question presents some of these extraordinary contradictions and anomalies that cannot fail to be highly instructive to any reflective mind, while the ingenuity with which the disgraceful compact is suggested, by means of the tempting bait, held out to the "decoy duck," evinces a degree of assurance and of talent, that might claim our admiration, if employed in a more worthy cause. But the specimen of "shingles to catch woodcocks," which we have quoted above, is not the only illustration we can furnish—the examples are neither isolated nor rare as the following advertisement from the "Lancet" will show.

To Medical Men and Chemists.—The advertiser being a *Surgeon Dentist*, attached to a public institution, and in private practice will engage to allow twenty-five per cent. for all patients sent to him for professional advice. Address A. B., Post Office, Leigh street, Burton Cresent, London.

We quote another from the "Times," as follows:

To Medical Men.—A dentist in full practice at the West End, will remunerate handsomely any medical gentleman who will send him patients. Address under cover to Y. Z. W. Balares, Regent street, London.

This last *rara avis* is perhaps the worst sample of all, Here is an unconscionable Shylock for you—who being, according to his own statement, "in full practice," opens his

insatiable maw to swallow up the few stray cases that the poor struggling and deserving men, close at hand, are starving for. But, in sober seriousness, it is much to be regretted that there should be educated men, members of a liberal and philanthropic profession, in which the noblest feelings of our nature are being constantly called into action, who would lend themselves to such fraud.

When the judgment and advice of a medical man are sought under these circumstances, the utmost confidence and security are placed in his integrity; and the patient asks it in the belief that his medical adviser is entirely exempt from all personal considerations in the matter. He presumes that in relying upon his recommendation, he may rest assured of the judgment and skill of the dental operator, of his ability to perform his duty, and that the charges will not be extravagant or unreasonable. What then must be said of the professional man who will degrade himself by either sharing in or countenancing these extortions, who so far forgets the dignity of his calling, and his moral obligations to his patient, as to pander to one of the worst vices of his calling, which is based upon quackery and incompetence, and which involves a breach of professional confidence?

That there are medical men who lend themselves to these practices, and hire out their professional character for a percentage, there can be no doubt; and that there are persons calling themselves respectable dental practitioners or extortioners who know that such men can be procured, it is equally reasonable to infer, as the circular and advertisements we have quoted will testify: and thus we find the representations of two learned and respectable professions, hanging together to levy and share black-mail on the unfortunate patient in a similar manner to the retailers of short sixes and long fours, and with the same amount of gentlemanly feeling and consideration as the lackeys of a gentleman's establishment.

Although the percentage system is carried on, *sub rosa*, to a considerable extent, sooner or later, exposure will follow; the misdeeds of these men will be made public, and the abettors

held to public indignation and contempt. It cannot be too often impressed upon all candidates for professional favors that, in the long run, honesty will be found the best policy; and that a reputation based upon such a disreputable system is as evanescent and as perishable as the unwholesome breath that has created it—*spectemur agendo*, say we. R.

ARTICLE VI.

Observations on Hare-lip. By ALFRED A. BLANDY, M. D., Baltimore.

HARE-LIP is a congenital deformity, which from its frequent occurrence, would lead one to suppose that its cause could be easily ascertained, but the contrary of this is the case, as the explanations of the credulous and superstitious have been too unreasonable, and approved writers upon this point are almost all silent, leaving curious conjecture to fill the void as fancy may best dictate.

Some have attributed this malformation to the manner of development of the superior maxillary bones; and here again anatomists differ as to the number of points of ossification, some determining upon two, others upon three. The latter would certainly seem the most probable, and to account for phenomena transpiring during development. *This* fact must appear as conclusive, that ossification of the superior maxilla often takes place at three separate points, which upon being interrupted by any cause disturbing the formative economy, fail of natural union, leaving the various descriptions of fissures which are found in the great number of defective palates, and the frequent existence of the disease under description.

This supposition is supported by Gross, in his Pathological Anatomy, where he states that it always depends upon the arrest of the natural development of these parts; but without any distinct division of the points of development. Cruvellier acknowledges that he has often noticed in maxillary bones of the

fetus and often of the adult, remarkable fissures, which would seem to indicate the separation of the bone at some time into three pieces, and terms this fissure the *incisive fissure*, visible on each side of the palatine arch, from between the cuspid and incisor teeth back to the anterior palatine canal, circumscribing that portion of the bone which sustains the incisors, and constitutes the intermaxillary of lower animals, and ascribes the seat of *hare-lip* to reside in the solution of continuity of these parts, assuming it as probable that this portion of the maxillary (incisive) is developed from one special point, and this is supported by several anatomists, as Bertin, Bichard and others. Here, then, is a philosophical ground upon which we can determine the cause of this deformity, capable of accounting for all of the various forms in which it is found, viz. simple and complicated hare-lip, fissure of the palate, &c.

Simple separation of the lip, is divided into the natural and the accidental, the former being a defect in formation, the latter the consequence of a wound. Both produce an irregular space of greater or less width, varying from close contact to a very considerable distance, and most frequently involve the front teeth, by their projecting within or without the alveolar arch.

Occasionally, we find even the single cleft and fissure much complicated by a perforation in the palate bones, which are sometimes wanting; again the soft parts are found deficient, the septum nasi distorted in shape, size or position, giving to the mouth and nose a very unsightly aspect.

S. Cooper relates a case, described by Tronchin, in which the *lower lip* was alone affected, and under this condition pictures the most fearful consequences, if unrelieved; from the escape of saliva, imperfect digestion follows, and death most likely ensuing in a short time, if not prevented by removal of the deformity, and thereby its consequences. But as simple fissure of the lip in the superior jaw, is now regarded as a less important matter, and as the closer description of the complicated, will embody all the necessary particulars applicable to the simple, we will pass it by with a few remarks upon the age; and here the divided state of opinion in our highest authorities,

as regards the most fitting time for operating, almost absolutely forces each operator to exercise his own judgment in each particular case, as to the time when it is best to be performed. Ledran, B. Bell, Roonhuysen, Lawrence, Mütter, &c., advise an early operation—as early as a few weeks after birth—setting aside the many objections offered, as inconsiderable; and some intimate that failure in operating on the infant is most generally the result of carelessness. Dr. S. P. Hullihen, of Wheeling, Va., in an article in vol. iv, page 244 of the Journal of Dental Science, offers many good reasons for early operation, and to which we gladly refer our readers for valuable information, founded upon much successful experience. M. Louis, Cooper, Chelius, South and others, recommend a much later period, ranging from three months to two years. The more modern practice is that which is followed and recommended by Dr. Hullihen in the before mentioned paper, and perhaps is, as a general thing, the most correct. The instrument most used in operating is the scissors; but of course this is left to the preference of the surgeon; many now prefer the knife, as in the use of even the knife-bladed scissors, there must be a considerable crushing or bruising effect produced before excision is complete; and as there is no objection to the use of the bistoury, answering as it does the most desirable ends, it were safest never to depart from its employment.

Complicated hare-lip is perhaps more irregular in its peculiarities than the simple, being found to consist in forms, all differing from each other, from the mere double fissure of the lip, without any other lesion of surrounding parts, to the combination of the lip, alveoli, maxilla, vomer, palate bones, uvula and the tissues in connection. Most frequently, it involves but a part of these defects, consisting of a single fissure of the palate, with the anterior part of the alveolar border displaced, in protruding with that portion of the lip towards the extremity of the nose. When to this condition is added a second fissure, forming one upon each side of the median line, it becomes the most lamentable, as closing of these fissures cannot be safely attempted until an age in which the patient can be subjected

to many restrictions, and to the exercise of much self-command and co-operation. The external appearance can be corrected, but articulation and mastication must remain greatly imperfect until such a condition be removed. Subjoined is a case, occurring under my observation, of considerable novelty, the subject being a little girl of two years and some months of age, who, with this exception, was handsomely developed; but so unsightly was the deformity, that she repulsed every one who approached her, striking them with still greater disgust in her attempts at speech, as, with double fissure of the lip, was double fissure of the palate and division in the uvula, the opening in the palate terminating immediately anterior to this appendage. Between these fissures appeared the portion of maxilla disconnected from either side, and joined only to the palatine bones at its posterior extremity, forming a large septum, as it were, to the united cavities of the nose and mouth, as it was in regular connection with the vomer and septum nasi. At the anterior alveolar border it assumed a cylindrical shape, in continuing its length to very near the extreme point of the nose, where it enlarged into a considerable bulb, and contained the two temporary front incisors, which were ordinarily covered by that portion of the lip having been carried out along with, and in front of the tubercle. This, owing to its large size, greatly impeded the passage of air, in and out of the nostrils, and presented also a serious obstacle to the introduction of food into the mouth, which, by subjecting it to constant irritation, had no doubt increased its size, producing a flexible condition, so that it could be easily moved in its pendulous position, and proving it to be a cartilaginous attachment to the nose. The lip upon either side closely embraced its neck, where the junction of the maxilla should be, so that it swelled out as soon as it passed its anterior surface, giving it length below the lip, and greater breadth upon both sides of each fissure.

I do not remember to have ever seen a rationale of the cause of these projections given by any author, and as they are never to be found at birth in these singular positions, there must be some mechanical cause existing, which produces the great ex-

tension so frequently met with. In most cases, I doubt not, it is owing to the manner in which the child uses the nipple, which, under these circumstances, is placed under the tongue, and between it and the lip, in this manner drawing its sustenance only by great force, which force must be supported by the intermaxillary tubercle, as this part is always the most prominent, and the first coming in contact with the tongue. The divided lip being able to give only a small resistance, this, in consequence, is continually being pushed upwards and outwards, and remaining thus subject to this action, until the neighboring parts are forced to bear their proportion of support, which is not the case until the whole is pushed some distance above the lip.

Immediate operation was determined upon, as soon as the patient could be placed in a proper condition; and for this purpose she was restricted to a moderate diet for one week, with close attention to the bowels, with a view of correcting an irritable and feverish state of the system. On the seventh day, an active saline cathartic was administered, producing a copious evacuation, which, when it had ceased, left the patient in a fine condition for the operation. Upon consultation with a medical friend, I determined to abandon the use of the interrupted suture, for that of the simple, as also the use of the scissors, preferring that of the knife, feeling assured, from the irascible temper of the child, with the difficulty of applying pins in this case, to obtain a permanent juxtaposition, that the operation could not be executed as well, or allowed to remain as undisturbed, with the pins as without them. And the result has induced me to abandon them in all after operations of the kind, and in which determination, I am happy to say, I am not alone. The child was tightly enveloped, by using a long towel passing around both shoulders, and firmly enclosing the arms, continuing the wrapper quite down to the feet, so as to prevent all opposition; and thus supported by two assistants, with all necessary articles within reach, I made an incision immediately beneath the portion of the lip lying over the tubercle, upwards to the base of the nose, and from thence backwards along the

base of the nose, to the junction of the maxilla, thus separating the septum and the tubercle, to a point ranging with the natural arch of the alveolus; then, with the bone forceps, excised the tubercle at its neck, within the lips, leaving the small portion of lip pendulating alone at the point of the nose. In cutting the bone at the neck of the tubercle, a small artery was severed in its substance, the hemorrhage from which was, with difficulty, arrested, as the vessel had receded some distance within the severed edges, and resisted the application of caustics, such as the muriated tincture of iron, sulphuric acid, &c. each failing, I applied tannic acid with no better success; the child began to sink rapidly from the excessive loss of blood, and as a last resort, I compressed the bone with a small pointed pair of pliers, which entirely checked the bleeding, but not until the child had fainted; the syncope lasting for some forty minutes, stimulants were used, which finally produced restoration sufficiently to proceed. The edge of the lip was now pared off downwards, as also the edges of the piece attached to the nose, with a bistoury, cutting upon a hard and flat piece of wood. Fortunately, little hemorrhage followed these incisions, from the great exhaustion previously induced, so that I at once applied the simple suture, by compressing the piece from the nose down to its proper position between the notch in the lip, and united it by two stitches upon each side; then, with a strip of adhesive plaster, reaching from ear to ear, broad at both ends, narrow in the middle, by which the lip was secured in its proper position, and holding the cut surfaces firmly together; then, by inserting a sufficiently large roller upon each cheek, under the strap, the action of the muscles was prevented from straining upon or separating the uniting wounds. In the centre of the strap were several small openings, for the escape of any matter which might otherwise accumulate and cause undue irritation. Then, with a cap bandage, completed the dressing, and with the necessary cautions to the nurse, the patient was left quietly sleeping. Union took place immediately, and in four days the threads were removed without trouble, the plaster again adjusted for four more days, when, with ordinary soft dressings,

it healed kindly, leaving but a slight vestige of the operation, the nose being a little depressed; but the age of the patient justified the opinion of its entire recovery from so slight a deformity.

ARTICLE VII.

Successful Operation on, and Treatment of, a Disease of Antrum Highmorianum of the Right Side. By Charles H. Dubs, Dentist, Natchez.

Description.—The patient, Dudley Hunt, in his fifteenth year of age, had been afflicted with a terrible disease for eight months without any proper surgical treatment, his parents being under the impression it was only the effect of a severe cold. He was first brought to me on the third of April, 1845, and on examination, I found there was considerable expansion of the bones of the cheek and nose of the right side. The palate bone protruded much into the mouth, and the extension of the bones were so great as to produce an entire obstruction of the right nostril, also the swelling so as to raise the floor of the orbit, pushing the eye so far out of its socket, as to cause total loss of vision on that side. There was a fistulous opening at the prominent part of the malar bone, of a fleshy nature, from which pus was issuing, and communicated with an opening in the gum opposite to the anterior bicuspid tooth of the right side. There was also another fistula near the canthus of the eye, opening into the right nasal cavity.

Operation and treatment.—The first and second superior molars being much decayed in the crown, I extracted them, and perforated through the socket into the cavity, causing considerable pain on the entrance of the trocar. A large quantity of greenish and yellow pus discharged freely from the opening and was assisted by several injections into the sinus, which

our youthful sufferer bore admirably and the flow being very copious, in a little time afforded him material relief. After this a cool emollient poultice was applied over the whole surface of the affected part.

April 4th. Very little pain this morning, and the swelling somewhat subsided, but found the external openings, as also that in the mouth, suppurating profusely and emitting a very fetid odor. On this account, I injected the sinus with a weak solution of chloride of soda in the proportion of one to twelve of aqua rose, lukewarm. This gave very little pain, and was followed by much coagulated lymph, and hard curdled matter. The emollient poultice of slippery elm continued morning and evening.

April 5th. On examination, I found the parietes of the alveoli much decayed, and also the external plate of the jaw. My patient was so timid that he required much persuasion before he would submit to another operation. I now removed the whole decayed part of the upper maxillary, extending from the posterior bicuspis near the socket of the dens sapientiæ, and thus formed a proper outlet. Occasional injections into the sinus were followed by much lumpy and fetid matter, along with a number of fragments of exfoliated bone. The nasal opening being completely closed, the solution found its outlet through the fistulous opening near the internal canthus. On examining this cavity with a probe, I found a large elastic substance which I judged to be a fungous mass. This the patient refused to allow me to remove, so that I had to confine myself to the use of injections, of a weak solution of chloride of soda, tannin and myrrh, until the 8th of April, when he consented to submit to the operation. Though the parts were very much inflamed and painful, I cut the fungus entirely away into two pieces, which together were about the size of an egg. Much lumpy matter and small pieces of dead bone followed. The injections and poultices continued.

April 9th. Removed a piece of exfoliated bone from the fistula near the canthus, it being a portion of the nasal bone. I also discovered the palatal bones in a state of necrosis, emollients continued.

April 10th. I made an incision from one fistula in the cheek, to the other in form of an angle, which enabled me to remove several pieces of bone that were exfoliated, and among them was a part of the malar and nasal bones. I now gave injections of sulphate of zinc, dissolved in warm water, thrown into the opening, and the lotion of chloride of soda into the sinus, and was much pleased to find the nasal opening pervious.

April 14th. The diseased parts have been discharging freely, and the patient doing remarkably well up to this time.

April 17th. Removed more loose bone from the opening in the cheek, the suppuration is decreased, the patient is recovering his spirits, and the sight of the eye has much improved. For a great number of red spots on the face I prescribed a bottle of Sands' sarsaparilla, injections and emollients continued.

April 23d. The diseased parts continued to improve, and the red spots on the face have entirely disappeared.

April 25th, 28th and 30th. Removed more dead bone from the superior maxillary, and palatal bones, usual injections, &c., continued.

May 2d and 7th. The health of the patient, and diseased parts still improving, the latter suppurating freely. On examining the lower jaw of the left side I discovered a hard tumor directly below the first inferior molar tooth, which was decayed and very tender and painful to pressure. I therefore extracted the tooth, and the hard tumor vanished in a few days.

May 8th and 9th. The diseased parts continued to suppurate, and on examination I found more dead bone which required to be removed. I accordingly operated with great care, and extracted a large bone, being a part of the sphenoid or orbitar process, of one inch and three-eighths long, and five-eighths of an inch wide, also several pieces of the nasal plate, the os spongiosa of the right nostril, and the os unguis. The injections of sulphate of zinc and tincture of myrrh, and the emollient poultices continued.

I may here state, as the first incision on the face did not heal more than half up in consequence of its profuse suppuration, it enabled me to remove the latter bones on the 9th of May.

May 10th and 12th.—I found my patient much improved, his eyesight being much strengthened, and relieved of pain, swelling quite reduced. The opening in the alveolus is now quite free, and from which there is a copious flow of pus; and the opening on the cheek has assumed a granulated appearance. For the inflammation of the eye, I prescribed a lotion of sulphate of zinc, acetate of lead, tincture opium and rose water.

May 13th, to the 18th.—The foregoing treatment was continued up to this date, with decided improvement.

May 19th.—To-day I commenced injecting the sinus with diluted port wine, from which the patient did not experience the slightest pain. The discharge of pus is but trifling and the secretions are assuming a normal condition. As my patient is desirous to go to the country for a few days, I prepared for him an astringent lotion for the mouth and throat, and removed from his teeth the tartar which had accumulated in considerable quantity. I also directed the emollient poultices to be continued, and moderate pressure with the bandage to be made over the diseased parts.

May 22d.—My patient returned home after three days absence much improved in every respect—same treatment continued.

May 26th.—On examination, this morning, I observed that the palate bone of the right side remained considerably swollen, and on probing the same through the alveolar puncture with a curved probe, I discovered an abcess about two inches long attached near the cribriformed bone. This, I at length, and with much difficulty, succeeded in extracting, and found it to be shaped like and resembled a cocoon, which, on being opened, was found filled with pus and flocculi. I now injected the parts with the lotion of sulphate of zinc and tincture of myrrh.

May 27th, to the 30th.—My patient absented himself by a visit to the country. He returned home on the 15th of June, and on examination, I found all the disease entirely removed, the puncture in the alveolus remaining open and free from discharge.

July 1st.—To-day I gave the sinus several injections, and finding the parts perfectly recovered, I scarified the gum at the opening in the mouth, and brought the same in contact, and applied the necessary dressing to keep them united.

July 6th.—The incision in the gum I found entirely closed, and all traces of this truly dreadful and extensive disease of the antrum maxillare and adjacent parts are completely removed.

July, 1850.—I have seen my patient several times lately, and he still continues to enjoy perfect health, there never having been the least tendency to a return of the disease.

ARTICLE VIII.

Importance of the Preservation of the Teeth. By L. S. PARMLY, M. D.

THE teeth and gums, it is well known, are organs most important to the animal economy. Their agency in distinct articulation, in ministering to the comfort and promoting the health of the individual, is too obvious to be insisted on. Suffice it to observe, that when, from disease or accident, impediments arise to interrupt the discharge of their proper functions, calamities most mischievous to the system ensue. Every medical man knows that imperfect mastication is a fruitful cause of many disorders, the most distressing, dangerous and even fatal to the human frame, and that for the proper performance of this operation of the economy, healthy teeth are necessary. The fact is also equally well established, that the means recommended for the preservation of the health of these organs and their immediate connections, are insufficient for the accomplishment of this object. But that it may be done, an experience of forty years has furnished the writer with the most abundant and ample proof. As it regards health and cleanliness, the means used, are for self-preservation. For the teeth and gums,

waxed floss silk, a dental polisher and tongue scraper, used daily, will prevent disease of these organs, offensive breath and dilapidated mouths.

In examining the progress of improvements in the varied branches of surgery, we may observe, with regret, that until recently, the dental department has not kept pace with many others of less utility. It still remains to point out to society the importance of preventing diseases of the teeth, gums and their connexions, in almost every instance, with the general health and preservation of the human system. Nothing can tend more to accomplish this object, than to embody a thorough hygienic course of instruction in the education of those who are preparing for this branch of practice.

The wants of general society, as well as the disposition of the present period, so favorable to the universal diffusion of knowledge, loudly calls for information upon this subject. When we advert to the progress of medical and surgical science, we are struck with the rapid and beneficial changes which have taken place in conducting those enlightened principles, which are the fruits of liberal education and the peculiar spirit of the present age.

The consequence of this will be, that the prejudices of the nurse, the mysteries of the empyric, and the pedantry of the schools will be lost sight of, as the years beyond the flood, and then the civilized nations will swarm with dental surgeons and hygienists, from which governments will select well qualified dentists for the navy, army and all public institutions of charity and learning.

Why the public are not sufficiently acquainted with the numberless and painful afflictions which originate in a neglected mouth, is self-evident. But, when the people are fully convinced, that from this cause alone, numbers drag out a life of distress, they will feel a greater curiosity, and take a more lively interest, in obtaining information respecting the dental art, which the considerations of appearance, comfort and health render so essential.

That such an interest has not been felt, is the more astonish-

ing, since we cannot but observe how anxiously solicitous the mind daily discovers itself to be, on subjects of less importance and utility.

The truth of this observation is obvious, for, in most instances, it is either the loss of the teeth, or the sensation of pain in the mouth, that calls the attention to its condition, when they readily discover the cause which moulders them away like other species of rusting, affecting the contiguous parts, tainting the breath, and rendering it disagreeable even to the individual himself. Thus, daily experience proves that the teeth and gums are generally the seat of pain and disease, and the question to be considered is, whether this state of infirmity be naturally entailed upon them, or is the result of ignorance and neglect.

The dental organism constitutes the natural ornament and armory of the mouth, and may be regarded as a weapon of defence. The teeth of the uncivilized nations are generally regular and free from disease, and no accumulations form to deface them. But, in civilized societies, with so much crossing, and the refinements in the culinary art, give the food a greater tendency to acquire noxious power, and form chemical combinations. This, with the modern help of knives and forks, lessens the friction which they would otherwise receive in the act of mastication. The more we examine nature in the policy of the animal machine, however varied and multiplied its parts, the more we discover the intimate connection of each part with the whole.

Numerous as they are, to each is assigned some peculiar and needful office, and in the healthy state the most perfect harmony subsists between them; no one obstructs, but each assists the operation of the other, and thus promotes the ultimate preservation, and gives longevity to the machine. By this wise adjustment, there is no schism in the body, no separate or interfering ends are pursued by the multiplicity of its members, but the safety and support of each are the undivided care of all. In this view, there is no part of the frame-work of man that is not of importance, however trifling or insignificant it may ap-

pear. The most vital, as well as those on which the lesse energies of the system depend, are equally essential to life an its comforts. On these considerations, the dental art claims a important rank in the care of the human structure, for on th teeth depends the proper and natural expression of the face; b their loss, the character and symmetry of the features are de stroyed, and beauty is deprived of its chief attraction an principal charm.

To the teeth also is assigned the chief power of enunciation If the great and pre-eminent prerogative of man is the possessio of speech, it can never be complete or perfect without the teet to modulate the sound. This circumstance gives them addi- tional value to those who wish to shine either in the senate, th pulpit, at the bar, or upon the stage. Without these instru- ments of utterance, the graces of their eloquence is partially lost, and the power of affecting the mind and convincing the understanding is considerably diminished.

It is the loss of the teeth that produces the leading marks o age, and occasions the contracted countenance, the wrinkles o the face, and those unseemly changes which youth and beauty ever wish to see at a distance.

In order to secure perfect health, it is necessary that the food be sufficiently comminuted by the action of the teeth. By this operation it becomes blended with the saliva, thus rendering its solution easy when it descends into the stomach, to be mixed with the gastric juice, without any other additional fluid to ren- der its digestion complete, in forming it into perfect chyme.

The enamel covering the crowns of the teeth may be con- sidered as an extraneous body, being void of perspiration or circulation; hence it does not possess the power of freeing itself from injurious accumulations; therefore dental hygiene becomes an indispensable part of education, for promoting health and comfort, and a primary duty, in view of the entire prevention of disease and deformity of the face.

If to vaccination we owe, of late years, a decrease of the annual partial deformity and mortality, a point clearly proved, the prevention of dental disease will add to this decrease, for

the constitution will not be interrupted unseasonably, or the health impaired by sleepless nights and days of tormenting pain and agitation, as happens to the majority of civilized men, who date the first symptoms of disease to their negligence in not regarding the health of the mouth and teeth, which may be done under every variety of constitution, climate and habit of body. Should these suggestions have the effect of awakening the profession to the importance of the prevention of disease in the dental organism, and of inducing them to impart the necessary instruction for the accomplishment of this object, to those who may seek their advice, I shall not regret having furnished this article, founded on my experience.

Having spent a few months in Baltimore, during the present session of the Dental College, I am gratified to find that the hygiene of the mouth constitutes a portion of the instruction given in this valuable Institution. I am also happy to learn that an effort is about to be made for carrying out this feature of instruction on a still more extensive plan, in aiding that virtue.

ARTICLE IX.

Operations on the Antrum. By R. D. ADDINGTON, D. D. S.

EARLY in March, 1850, whilst I was endeavoring to prevail on a gentleman of this city, to submit to the extraction of some diseased teeth, as the first step to be taken to restore his mouth to health, I casually mentioned some of the symptoms which occur from a diseased antrum; when he informed me, he had an intimate friend, who, he had no doubt, from my description, was suffering from it. He exhibited much pleasure, when I assured him the disease might be readily cured, and he promised to persuade his friend to see me. In this, he anticipated much difficulty, as his friend had patiently submitted to his disease for about twelve months, and was unwilling to make his case known; yet felt convinced the disease was undermining

his health. His relations had often exhibited much concern about him, as he had a large family dependent on him for a support.

With this information, I was the better prepared to receive a visit from this gentleman, who had heretofore shunned advice from a false delicacy. Some days after, I had the pleasure of meeting Mr. S. at my office. He was about forty-five years of age and apparently in bad health. He informed me that an offensive and nauseating discharge continually dripped from his right nostril. This, I found, had obviously assumed an unusual malignancy, which I attributed to the enervated condition of his body. He informed me, the discharge was sufficient to thoroughly dampen several handkerchiefs a day. When his attention was first drawn to the disease, he felt an uneasiness about the right cheek. This was soon followed by violent pains, which sometimes continued, at other times, soon passed off; and when he began to notice the discharge from his nostril he was only occasionally troubled with a dull pain, accompanied with fullness. This cessation of excruciating pain had reconciled him to the excessive discharge, which, from its acrid character, had caused the pituitous membrane of the nose to be much inflamed. An examination of the mouth and teeth presented an unusual degree of health, except the second and third molars of the right side, the crowns of which had been destroyed by caries, and their roots separated and showing five pieces; the gum around them was inflamed, it being more decidedly flabby about the roots of the second molar. When the head was inclined to the left, the discharge from his nostril was increased. There were no indications to suspect a scrofulous or scorbutic disposition or those of a venereal taint. I viewed the case as a chronic disease of the antrum, the cause entirely local, and determined to treat it accordingly. I, therefore, assured my patient of a speedy cure, if he would allow me to remove the roots. To which he assented. After their extraction, I found no connection through the alveoli with the antrum, except by the palatal alveolus of the second molar. The root from this cavity was of ordinary length, without the appearance

of absorption, and could not have perforated the antrum. The intervening plate of bone that once existed, as with the other roots, had been destroyed by a puriform secretion, generated in an abscess, I found attached to the root. This connection I enlarged, which was followed by a small discharge. I injected the antrum through it with cold water, when I observed passing into the pharynx a large quantity of matter, mixed with flocculi. The odor was now insufferable to the patient and myself; we, therefore, retreated from the apartment, and he was requested to call the next day—when the same result followed the injection of cold water, as on the preceding day. On the third, the discharge was less offensive. The patient was informed of the importance of preventing the closure of the opening; and as I considered this the best remedy for a cure, I desired him to enter his syringe three times a day, and inject the cavity with the following formula, to remove the fetor of its secretions:

℞ ℥ ½ chloride of soda.
℥ 2 rose water.

ARTICLE X

On the Use of Gutta Percha, in Fractures of the Jaw. By H. N. WADSWORTH, Georgetown, D. C.

ABOUT six weeks since, E. O., a lad of this city, of ten years of age, in running across the street, fell and striking his face against the curbstone injured his jaw and teeth severely: a physician passing, was called in and finding the injury confined to the mouth, advised sending for me.

On examination I found the left temporary inferior cuspid broken off within a quarter of an inch of its apex, and thrown upon the pavement; the process anterior to this tooth split down and turned outwards, with the lateral and central permanent inferior incisors: the superior central and lateral permanent incisors; the temporary cuspid and the two temporary molars of the left side with the process on their labial

or external side were doubled into the mouth in a single piece; the process appeared to break near the points of the roots of these teeth, and with the exception of a few fragments near the incisors was connected and formed a solid piece with the teeth attached; the process on the palatine side of the teeth, did not seem to be injured; the points of the teeth, or cutting edges, were fully half an inch out of their proper position. Dr. Riley, the family physician, being called in at my request; after a careful examination, it was decided to endeavor to save the bone and the teeth attached, as the extraction of the teeth would have brought the whole piece of process with it; at my suggestion the following plan was adopted, and left to me to execute by the politeness of Dr. Riley.

Extracted the last superior temporary molar of the left side, it being very carious: fitted a gutta percha mould to the teeth that were displaced in the upper jaw: tied a ligature around the two teeth in the lower jaw, and drawing them to their place with the bone attached, fastened the ligature around the lower temporary molar of the right side; fitted a gutta percha mould over the lower teeth; cutting out enough to avoid touching the two fractured inferior teeth; caused these two moulds to antagonise so as to give the upper one an upward and outward pressure when the jaws were closed; having previous to all this removed the small pieces of bone, and washed the parts well in cold water, the moulds were applied, the jaws closed, and a bandage passed tightly around the chin and over the head; and cold applications of water ordered to be constantly applied to the face.

No medicine of any kind given; a light liquid diet; and two or three injections to move the bowels; on the second night we decided to leave off the moulds during the night, owing to the tumefied state of the adjacent parts, but by constant application of cold water it was so much reduced as to render it proper to resume them, and with the exception of their removal to allow him to eat and wash the wound, which was done with a syringe and cold water, it was worn for three

days when it was discontinued, the bone having set. No evidence of the accident now exists, except the elongation of the superior teeth about two lines beyond their fellows.

About two or three years ago, a man was sent to my office to have his lower jaw set: twelve hours previous he had been struck by a "slung-shot," at the angle of the lower jaw, with such force as to break it at the ramus of the left side, and again at a point very near the mental foramen of the right side: the whole of this part of the inferior maxillary was detached, and had fallen as far as the soft parts would permit: obtaining the assistance of Dr. Charles H. Cragin, we proceeded to fit a gutta percha mould to his jaw, which, when it had become hard, enabled us to confine it in the most perfect manner, with bandages passed over the head. This man being a captain of a vessel, belonging in Massachusetts, and leaving the same day, I have never heard from him since.

These two cases are reported to call the attention of the profession, to the usefulness of gutta percha in setting fractures of bones.

ARTICLE XI.

Reported Case of Epulis. By R. McLimont, M. D., D. D. S.

The following case happened in my practice the other day; if you think it of any interest, you can make use of it.

Mrs. S——, the wife of a laboring man in this city, called upon me a short time ago, at the advice of her medical attendant, respecting a large tumor of two years growth, situated on the upper jaw, over the incisor teeth, extending on the anterior surface from the median line to the left canine fossa, and half way across the hard palate. It was about the size of a silver dollar, had a broad base, uneven surface, hard and destitute of of sensibility. It had forced itself between the central and lateral incisors, separating these teeth about *one inch* from each

other. It caused the upper lip to protrude much, and was altogether a most unsightly object. This was a very aggravated case of *epulis*, originating, in all probability, from diseased alveolar cavities, and primarily from the teeth, which were all carious and quite loose. I advised their extraction, and the removal of the tumor. I took her to Dr. D——, of this city, who fully corroborated my opinion, and appointed a day in the following week for the excision of the tumor. I was permitted to be present on the occasion. The incisions were made with a scalpel, and the bone removed with Liston's excising scissors. The cavities appeared to be diseased, but the body of the bone was sound. The tumor was exceedingly vascular and abundantly supplied with vessels. Of course the operation was followed by a considerable disfigurement and loss of intonation, both of which evils I shall try to remedy by the application of an artificial gum and palate, with teeth.

SELECTED ARTICLES.

ARTICLE XII.

Mechanical Dentistry. By T. L. Buckingham, Dentist, Philadelphia.

Taking an Impression in Wax.—Select a cup large enough to leave a space of an eighth of an inch for the wax between the cup and the gum. Prepare the wax by softening before a fire, and working it in the fingers until it is soft enough. Fill the cup full of wax, giving it somewhat the shape of the gum, and using no more than is necessary. Put it in the mouth, standing behind the patient when the impression is for the upper jaw, and before when it is for the lower jaw. Put one hand on each side of the cup, and press it gradually up until the impression is nearly deep enough; then, holding the cup steady

with one hand, press the wax close to the gum on the outside, and also to the roof of the mouth; now put one hand on each side of the cup, and press it up a little farther, and the impression is complete. To remove it, take hold of the handle of the cup, and loosen it gently, and take it out of the mouth by turning it so that one side will come out first. Be careful not to let the lips bend the edge of the wax over into the impression. If, in loosening the wax from the mouth, the teeth have drawn the wax up around the impression of them, it can be cut off with a knife. Compare the impression with the mouth, to see if it be correct, and fix in your mind the teeth that are to be clasped, if clasps are necessary.

Taking an Impression in Plaster.—Plaster impressions are taken of the upper jaw only, and where there are no teeth; for, if there are teeth, they would break the impression so much in removing it, that it would be useless.* The cup should be of the shape of a suction plate. If such a one is not to be had, an ordinary cup can be substituted, by building it up back with wax, to keep the plaster from running out. Make it as near the shape of the mouth as possible, only larger. Mix the plaster pretty thick, stirring it well while mixing, and pour into the cup, leaving it stand a moment, or until it becomes so stiff that it will build up without settling down. The patient should have a napkin spread over the breast to protect the dress from any plaster that might fall, with the head inclined forwards to prevent the possibility of any of the plaster going down the throat. Get the plaster into the mouth as gently as possible, and press the cup gradually up until the impression is deep enough, and hold it there until the plaster sets, which will be from three to five minutes.† It can be told when the plaster is

*There are some who succeed in taking an impression of the lower jaw in plaster; and also in taking impressions where there are teeth remaining in the mouth; the latter they accomplish by breaking the impression in the mouth, and connecting the pieces afterwards by cement.

†The plaster will harden sooner by mixing it with salt water. This will do in taking impressions, but will not answer for casts, as it makes the plaster crumble.

hard enough, by trying what hangs over the edge of the cup, or what has been left in the vessel the plaster was mixed in. When it breaks short, or has lost the sticky feel, it will do to remove it from the mouth.

Plaster takes a much better impression than wax. The wax, when pressed up, will slide over the roof of the mouth, which often spoils the impression; and again, it often sticks to the mouth, and is difficult to remove, or the edges will be curled over in removing it from the mouth; but none of these objections will apply to plaster, excepting that the edges may be broken in removing it; but these can be replaced and made perfect by using a little cement.

I am satisfied that if the mode of taking impressions with plaster be once adopted, it will not be abandoned, at least not to go back to wax. Out of a number of cases, I have never failed to make a good fit when I took the impression in plaster.

To make the Plaster Cast.—Take a strip of sheet lead, such as is used for cutting patterns, or a piece of paper folded three or four times, leaving it some two inches wide, and a foot or more long. Set the wax impression after oiling it, on the table, and fold the strip of paper around it, and so shape it that the cast will be largest at top;* mix the plaster just thick enough to flow into all the indentations in the impression; then with a knife or spoon, drop a small quantity into the impression, commencing at the roof of the mouth, letting it flow down gently, filling up the impressions of the teeth, when the balance may be poured in from the cup until you have the cast from one and a half to two inches thick. Let it stand until the plaster is hard enough to keep its form, then remove the band and let it remain until perfectly hard. The wax can be removed by first cutting it away, so as to free the edge of the cup all around, then by running the point of a knife between the cup and wax, the cup can be forced away, leaving the wax on the cast. Then hold the wax to the fire until it is quite soft, and holding the

*In taking a cast from a plaster impression, allow the impression to become perfectly dry, then oil it, and cast as described for wax.

cast in one hand, bend the wax up in front until the surfaces of the teeth are exposed, then cut the wax away until the teeth are all free, then the large portion of wax in the cavity of the cast can be removed in a lump. The cast should now be trimmed, so as to draw readily from the sand. If the front of the cast, or the teeth on one side should project, there must be left a corresponding fulness on the opposite side; or, that a line drawn lengthways with the teeth in front, and one drawn on the opposite side of the cast would diverge as they go from the teeth to the top of the cast.

If the cast is not perfect around the teeth, it must be trimmed until it is so. Of course, the object is, to have a perfect model of the mouth. It is well to varnish the cast with some spirit varnish; I prefer a varnish made by dissolving gum sandrach in alcohol, as it leaves the cast almost white, and penetrates farther into the cast, thereby making it harder than the shellac varnish, which is generally used.

If the points or edges of the teeth are closer together than their necks, the space should be filled up with wax until the sides are at least parallel. If it is designed to fit a cavity plate, the wax for forming the cavity should be put in after the cast has been varnished, as it sticks much better on the varnished cast; and it can be varnished also.

Moulding in Sand.—Take some of the finest casting sand,* just moist enough to hold together; fill a small vessel, say a common tin cup. If it is too wet, the hot metal when poured into it, will cause so rapid an evaporation of the moisture as to make the metal boil; and if too dry, will crumble when the metal is poured in, either of which would spoil the cast. Screw an ordinary stump screw into the top of the cast, and press the cast, teeth down, into the sand, then pack the sand around the cast until the sand is level with the top of the cast; now take hold of the screw with one hand, and with a small hammer in the other, tap the shank of the screw gently, so as to jar the

* We have noticed that common whiting has been used instead of sand, with good success.

cast in the sand, and turning the cup around, striking the screw on several sides, until the cast is loose, then lift it up slowly and carefully, tapping the screw in the meanwhile, until the cast is out of the sand. If the sand has drawn up around the teeth, brush the sand off the cast, and replace it in the mould, going through the operation as before, and if necessary, repeat, until the mould is perfect. If a little loose sand should fall into the mould, it can be turned up and the sand blown out. The sand should not be packed too tight, but have it sufficiently porous to allow the vapor to pass through it.

Making the Zinc Cast.—Melt a sufficiency of zinc, and when it has just melted take an old knife, or something similar, and skim off all the dross; let it stand until it begins to harden, or stick to the sides of the ladle, then pour it into the mould, beginning at a part of the mould where it is not required to be perfect, for fear of the metal washing the sand, continue to pour gently, with the ladle close to the sand, until the mould is full. Let it stand till the metal is hard, then remove it and cool in water. If the cast is not perfect around the teeth, the superabundance can be cut away with a coarse file and graver; and, if necessary to separate the teeth on the zinc cast, it can be done with a small saw, such as carpenters use for sawing circles. The zinc cast should, of course, be a fac-simile of the plaster model.

If a zinc cast has been properly made, it will be as bright and smooth as a piece of silver plate. If the zinc be poured too hot it will boil, though the sand be in a proper state.

To make the Lead Cast.—Put the zinc cast into a cup or ring, with the teeth up, and with a small quantity of sand under it, to make it set steady; then fill the cup with sand, and pack it down, until it is three-quarters of an inch above the teeth, then cut the sand out with a knife, until all the parts of the zinc cast, where the plate is to fit, are exposed. Where the plate curls over the gum, the lead cast should be thick, but it need not run farther down on the zinc cast than the plate is to go. If the lead cast be too deep, it makes it more difficult to swage the plate, and the plate will stick in the lead, and be bent in

getting it out. Melt the lead in another vessel than the one in which the zinc was melted, for if but a small portion of lead be mixed with the zinc, it will spoil it for future use. Pour the melted lead over the zinc cast as prepared, and in a few minutes remove them and wash clean, and knock them apart with a hammer, and all is ready.

To make a Plate.—Take some thin sheet lead, and by pressing it down on the cast and marking and cutting out, get a pattern of the size the plate is desired, then spread the pattern out, and lay it on the plate, and mark and cut out; anneal the plate by heating; now, with a pair of pliers, or bending plate forceps, and a small wooden mallet of suitable size, fit the plate as near as possible, to the zinc cast, then put your casts together with the plate between them, and strike the zinc cast lightly with a hammer, then take them apart and see if the plate is in its proper position, and repeat, striking the cast a little harder, until the plate is nearly up, when, with two or three smart blows, the plate is made to fit the cast accurately.

In swaging a plate be sure to get it started aright, and it may be necessary to anneal it two or three times during the operation, and also to file away a little if it should bind too tightly in any place. When the plate fits the zinc cast, it should be tried on the plaster cast to see if it fits it also. Then bend the clasps with a pair of round-nosed plyers to fit the teeth as near as possible, particularly around the necks of the teeth where they are to be soldered to the plate, and file the plate away to allow them to go down between it and the teeth; now arrange the plate and clasps on the plaster cast, and stick them together with some wax or cement, then lift them carefully from the cast, and set them on a piece of charcoal, then pour some mixed plaster over the ends of the clasps and under the plate; when it gets hard, remove the wax, and if there is any place where the clasps stand off from the plate, fill it up with scraps of gold; now coat the places or joints, where the solder is to flow, with borax, and lay on the solder and melt or flow it; when it is cold, try it on the zinc cast, and fit the clasps up to the teeth with a small hammer, then remove and file the clasps

and plate to the shape they are to be, then put the plate on the zinc cast, and, after cutting away the lead cast so as not to drive the clasps down too far, put them together and swage the plate up again, and see that it fits the plaster cast. The plate should now be boiled in some diluted sulphuric acid, for a few minutes, to remove the fire coat, and, after washing it, stone up and polish the plate. Some do not polish till after the teeth are soldered on, but I think much time is saved by polishing at this stage of the operation, as it can be done so much more quickly than when the teeth are on. Now try the plate in the mouth and make it fit perfectly easy. Cut, file and bend it if required, till both yourself and patient are satisfied.

It is very important that we should have the confidence of the patient, and this can generally be secured by giving satisfaction, and also by making all necessary explanations.

When the plate has been properly adjusted, take the close of the mouth, as follows: Put the plate on the plaster cast, and arrange the wax on the plate where the artificial teeth are to go, leave the wax longer and fuller than the artificial teeth are to be, then put the plate in the mouth with the wax on it, and have the patient close the mouth naturally, and if there are natural teeth in the opposite jaw which antagonise with teeth in the jaw you are fitting, let the mouth be closed until they come together. If there should be no natural teeth to articulate, some hard substance had better be put into the wax to keep the patient from biting too far into it. Notice, that in closing the mouth, the under jaw has not been projected or twisted laterally, but that it has been a natural close. As patients are very apt to project the lower jaw in closing the mouth, a good plan to prevent it is, to put the hand against the lower jaw, and press backwards as the jaw closes. If the close has been correct, mark the exact centre of the mouth, and remove the plate and wax, and select a tooth for shade.

To make an Articulating Cast.—Place the wax with which the close of the mouth was taken and plate, on the plaster cast, and fill up the roof of the mouth even with the points of the teeth, and nearly as far back as the back of the cast; then cut

a V shaped groove down the back of the cast, and oil it well, so that the articulator will not stick to it; then mix some plaster and drop it into the impressions of the under teeth, and let it flow down the back of the cast, filling up the groove; then make the plaster thick enough to build up with a knife.

The articulator should be about half an inch thick on the top and back. When the plaster has set, it can be trimmed off, and the casts taken apart. When the plate and wax are removed, and the casts put together, we have a fac-simile of the mouth when closed.

The teeth may now be selected to suit the case; the shade tooth and articulating cast will be sufficient guides in their selection. To grind the teeth to the plate a grinding machine of some kind is necessary, with several sizes of emery wheels. I prefer a small lathe, as it best answers to polish plates. Put the plate on the cast, and commence to grind the teeth to fit. If it is intended to run the necks of the teeth over the plate and press upon the gum, the cast should be scraped away about the thickness of a five cent piece; if, however, the gum be very soft or spongy, it may be scraped even further. The teeth should be ground to fit the plate and the neck-press upon the cast, allowing sufficient projection to clear the under teeth. The necessary projection and length will be ascertained by putting the casts together, as the teeth are ground to suit, they must be attached to the plate in their proper position with cement. (Cement may be made by melting beeswax and resin together.)

Another and quicker way to grind the teeth, is to build up some wax on the plate, and arrange the teeth around on the wax, but as we cannot see the back of the teeth for the wax, we have to grind by guess, and often leave a space between the base of the teeth and plate.

When the teeth have been ground and properly arranged, remove the plate and teeth from the cast, and set them on a piece of charcoal, then mix some plaster and sand, about equal parts, and pour it around the teeth, and let it flow under the plate; when the plaster is about half way up the front of the

teeth, put a piece, or two or three pieces, of stiff iron wire, twisted together, around the front of the teeth, so that if the plaster should break in heating, the teeth will not be drawn out of place ; then build up the plaster until the points of the teeth and the clasps are covered. The plaster should be about half an inch thick. If there be too much plaster, it will take an extra heat to solder the teeth, and if too little, it is liable to break before the teeth are soldered. When the plaster has become hard, the cement that held the teeth to the plate can be removed, and the stays put on the teeth.

In putting the stays or lining on the teeth, take a strip of gold —if a gold case—of suitable width, or nearly as wide as the teeth, and stand it up against and along the back of the tooth, and file the end, if necessary, to fit the curve of the plate to which the lining is to be attached when soldered, move it sideways against the lower pin of the tooth, and it will be marked where the pin comes, then with the punch forceps, punch a hole for the pin, then put it back again with the pin in hole, and move the strip as before against the upper pin, by which you get the spot to punch the other hole ; see that it fits the tooth after filing off the metal which the punch has driven through, then countersink the holes on the outer surface, and cut the lining off the proper length. I generally leave the lining large enough to cover nearly the whole surface of the tooth. In punching the linings, punch always from the side that goes next the tooth.—*Dental News Letter.*

ARTICLE XIII.

Filling Teeth. By James Taylor, M. D., D. D. S.

The cavity having been prepared for a filling, by the entire removal of the disease, the margin being firm, smooth, and somewhat regular, that is, not notched and ragged, or the edge frail and brittle. The walls extending inward, being as near perpendicular as possible, or if beveling, so as to slightly en-

large the cavity within, yet not so as to form a neck, but the wall to present a continuous plane, so that a fold of the gold may rest against it smooth and straight its entire length.

Let me here draw attention to one circumstance, which, if neglected, will ultimately show itself around the margin of the filling. It is this—that in shaping these cavities, that is, in removing the carious portion, if particular care is not taken, the diseased bone just beneath the enamel will not be removed, and we will have a neck shaped cavity, the neck of which will be filled by caries. The decay will generally be found full as large at the entrance of the cavity, immediately under the enamel, as within. A portion of the enamel yet apparently unaffected by the disease, laps over the decay; this, in the brown and white variety alluded to, may be still unchanged in color; yet, with a proper shaped excavator, which can be thrown in under the enamel, it will be found soft, or undergoing decomposition. When this is ascertained to be the case, it shows that the enamel has not been sufficiently removed. This diseased bone I generally remove first, and then trim the border to suit; or, as is often the case, cut and trim until I find this part of the cavity perfected. Just so in the use of the drill; the first one used cannot, and generally should not, be as large as the decay, but after using one that will pass in readily, cut the decay from under the enamel; then a larger drill, and repeat this till this part of the cavity is perfected. As I before remarked, however, the first step in the preparation of the cavity, is the breaking down of the enamel which covers the decay, with the cutting instruments, and this is done to the extent necessary thoroughly to expose the disease.

We pass on to the next step in this operation, and this would be the preparation of the gold; for this should be prepared and ready for insertion before the cavity is washed out and dried. I am aware that various plans are adopted to accomplish this object. Some cut the gold in strips of about one-fourth of a sheet; then roll into a cylindrical form, adding strip after strip to this roll, till enough is added to fill the cavity; then make a few folds at one end, sufficiently large to be retained in the

cavity when put in, till other folds are made with the plugger and forced upon it, filling up, by these repeated folds, the entire cavity. Others take two or three sheets of gold, lay carefully together, then fold once or twice, so as to get some ten or twelve thicknesses of the foil, then cut in strips as wide as the cavity, leaving these strips all united; then roll up one end into a ball sufficiently large to be retained in the cavity; then fold in, in regular and successive layers, as much as can be forced into the cavity. This plan, when done by an expert operator, goes far to the accomplishment of all that is desired.

Some difficulties, however, present in the proper introduction of the gold in this manner. Let us take, for instance, a central cavity. You commence with a strip, introducing the folded end first, then with your instrument draw up and force in another strip; let this be done with all the care imaginable, and all these strips will not be of one length; some will have been drawn entirely within the cavity, while others will project without. A few *misfolds* of this kind will occasion two things: first, the too rapid filling up of the cavity within for the border; and second, an irregularly compacted surface for the filling, rendering it more difficult to put on a fine finish. The same objections hold good as regards the first plan.

But this condition of things is far preferable to that which often takes place. The first fold or ball is forced into the bottom of the cavity, the next on top of this, and so on, filling up from the bottom to the top. If this plan is adopted, and it certainly is the easier, so far as the filling up of the cavity is concerned, yet what is to hold the last fold of gold. True, this may be worked into (more or less) that which is beneath, yet, if I mistake not, such fillings will generally be found to wear down pretty fast, and be far easier picked out than when the folds are compacted in the other way. Others again roll up small balls of gold, and force in one after another, beginning at the bottom of the cavity. The great desideratum undoubtedly is, to fill up the entire cavity, make the gold as solid as possible, impervious to air or moisture, and so compacted and held together, that one portion cannot be removed without the whole, unless by the aid of a cutting instrument.

That plan which will secure the introduction of the most gold, and best fill up the entire cavity, is certainly the best, and that which experience and long practice has made easiest to one, may be, for the want of this, almost impossible to another. Well do I remember the first filling I attempted to introduce with my foil cut into strips, and with foil such as recommended by one of our best dentists. This foil was rather hard yet adhesive, so that when folded it would stick together; when once introduced, it made a hard plug, and bore a fine polish; yet, after long and tedious labor, I tore my plug entirely out, and took up my cylindrical rolls. This to me then was *the* plan. But one failure did not discourage me; I tried other foil, and at length nearly threw my rolls aside. Notwithstanding I did this, and preferred my gold in strips, yet the objections already alluded to, determined me to try another plan, and I commenced this in the central cavities, for I found these, especially in the second molars superior, also inferior, to be as difficult to fill neatly as any other, which was anything like as accessible. I commenced by taking my strips, such as I had been using; these I cut, say one-third or fourth longer than the depth of my cavity. I then carefully rolled these into blocks of various sizes, having one sufficiently large to retain its position in the cavity when introduced. The object being to place these perpendicularly in the cavity, and fill up from the farthest portion of the cavity forward; but to do this the ordinary plugging instruments would not answer. For a long time I used a couple of pair of pliers, so shaped at the point as to resemble the ordinary sharp pointed plugging instruments used for these cavities.

I have now perfected what I call a set of plugging pliers or forceps, consisting of five pair, to these I shall probably add one or two more. The five are made from patterns of instruments most used in general filling. When closed, they resemble at the point these instruments, being sharp at the point, and so bent as to enter almost any cavity accessible with any instrument. When closed, therefore, they can be used as the ordinary instrument; and are thus often used for compacting the gold as introduced; and so admirably do they answer for this

purpose, that in using the strips for filling, I use also these forceps. They possess one advantage over the ordinary plugger, which is, that with them you can catch hold of the strip at any point desired, carry it direct to the bottom of the cavity, and thus secure the desired length of fold. The spring of these instruments is such as to permit them to be closed with slight pressure, yet such as to force the blades some half inch apart, when this pressure is entirely removed. They are about five or six inches long, this should be determined by the length of hand, &c. Let us now take as an illustration of the method of using these instruments, the filling of a central cavity in an inferior molar. The cavity has been prepared, a napkin is held in place around the tooth with the speculum. The cavity has been thoroughly dried by the use of cotton, tissue paper, lint, or some such substance, which will most readily take up the moisture. The foil has been rolled up in blocks to suit the size of the cavity requiring some four, six, eight or ten, to fill the cavity depending on its size. These blocks you have laid perfectly within your reach. You then take a pair of forceps bent at near right angles; with these take first your largest block, place this on end in the posterior part of the cavity, having the cut border of gold projecting out of the cavity, say one-fourth the depth of the cavity; the other end, of course, resting on the bottom. When this block is to its place, and forced back solid against the posterior wall of the cavity, another next in size is introduced in like manner, and forced back against this; but it must here be remembered that this block will not, as the first, reach across the cavity; hence it should be forced to one side. The third block to the other, the fourth to the center, and so on until the cavity is completely filled. As each block is introduced it is pressed solidly back to its place, the last block introduced has a portion of the strip unrolled, and as much of this as *can be*, is forced in as a closing wedge. We here see the propriety of having the walls of the cavity perpendicular, so that these blocks will rest solid against them without being bent or broken down. In large cavities, after the introduction of each, or two or three blocks, a strong plugging instrument

is used to force back and down these blocks, and thus give room for the introduction of others. We have here a filling made up of continuous layers of gold, each layer projecting above the cavity. No fold too long or too short; for in deep and large cavities the bottom can and should be first filled up to a level with the shallowest part of the cavity, by the introduction of one or more blocks laid in on their sides, and made perfectly solid. And this I do in all those cavities of much size, and where there is much tenderness at the bottom. A little experience will soon direct the most proper size and firmness of the blocks to be used, also their length. I have found that if properly introduced, and consolidated as introduced, that but little pressure on their ends is necessary to finish the compacting of the gold; yet this part of the operation is very important, as pressure should be made as the tooth will well bear. For this part of the operation a few strong instruments are necesary. These I have constructed in a manner which render them fit only for this purpose. I take the ordinary straight, curved, and flat compressing instruments, but the points are cut like a file, the sides of the flat are also made this way. These are to be used after the introduction of the gold. Two objects are had in view in having my compressing instruments thus made. The first is, they can be held more readily to the place; not being half so liable to slip. The second, they compact and unite the surface, and by a rotary or sliding motion, file off as it were, that portion of the gold which cannot be forced into the cavity. In the use of these instruments a continuous, straight, heavy pressure is not the most effectual; but the motion should be made so as to rock the instrument, as it were, back and forward on the gold.

Fillings inserted in the manner just described, in central cavities, where these have also been properly prepared, will not wear out by any process of mastication, short of that which will wear the teeth away.

The manner of filling all the central cavities is so near the same that a separate description is not necessary. I shall therefore only allude to a few particulars, which change to a

certain extent the manner of introducing gold. Occasionally we have a cavity too small for entire block filling. When this is the case, I use a small block rolled up on the end of a strip of gold, and force this into its proper place ; then, with a sharp pointed plugger, carry in layer after layer until the cavity is well filled. It is well to have at all times a small strong spear-pointed plugger, to introduce the last folds of the gold. An instrument well adapted for the commencement of a filling, will not always be at all suitable to finish with.

I have alluded to one form of central cavity, which requires at this time a passing notice. This is where the sutures or fissures crossing the molar teeth, particularly the inferior, is the seat of disease ; and this follows these sutures to their extremes. But here they dip somewhat deeper than in their entire course ; and the disease has here made progress somewhat in proportion to that at the center. This condition of things will often make one pretty large cavity in the center, with two, three, or four smaller ones running into this, here taking an inferior molar for example, I should fill the posterior first, second the inner, third the outer, then the center, finishing on the anterior. I wish always to fill that portion of the cavity farthest from me first, because in this way I retain a perfect view of that portion yet unfilled, and can see that my blocks or folds of gold are properly arranged.

I have not alluded to other instruments than the speculum for holding the tongue in place, and keeping the tooth dry, because I have found none which would compare to this for general use. The corner of a napkin neatly folded, and thrown around the posterior molar or dens sapientia, so that the end shall be on the outside against the cheek, the larger fold then is over the tongue. A pledget or two of cotton may still be forced in around the tooth to be filled, this will absorb any saliva, which might otherwise reach the cavity. This, however, is done after the speculum is placed over the napkin. A description of this instrument is unnecessary, for I believe it is generally used. It is held in place by the patient, and if properly constructed, and placed in the mouth so as to produce

no pain when pressed upon, is of incalculable service. It is, however, only applicable to the teeth of the maxillæ. The same difficulty is not generally experienced in keeping the superior teeth free from moisture, during the operation of filling, yet even here we sometimes meet with difficulty.

Some place a large piece of cotton on the labial surface of the teeth; hold this in place with the forefinger of the left hand; with the thumb resting against the palatal surface of the tooth; or reverse this order of thing when applied to the teeth of the right side. Others use a cheek holder made of pearl. This at times may answer a good purpose, yet it keeps the left hand too far from the teeth, so much so that it can be of no service in handling the gold. The corner of a napkin used as the piece of cotton, I have generally found sufficient, and full as convenient. Custom in this as well as in almost every thing, will generally give success and choice of the method used. In the upper teeth, as we advance back in the mouth, difficulty of access and consequently of filling increases. The manner of preparing the gold, of introducing and compressing, has been described. This is applicable to the use of gold; also tin when used in blocks. But I have generally found this metal in foil to possess so little adhesiveness, that the folds will not well adhere together; hence, when using this article other than in blocks, I have cut in broad strips and rolled in cylindrical form. Of late years, however, it is so little used that I have taken no special pains to test the best method of using it, unless, indeed, a few large fillings inserted in the form of blocks; these soon acquired a solidity of surface, and bore a better finish than I have usually expected from this metal. No amount of labor, however, can make it as hard as gold. After the filling has been introduced and consolidated, the projecting foil must be cut to the proper level, and thus prepared for a proper finish. This is done with files and scraping instruments, so constructed as to accomplish this object with very little trouble. The perfection to which files have been made for this purpose, the warmest gratitude of the profession is due Mr. Murphy, the manufacturer, as well as those of our breth-

ren, who have taken the pains to form, and labor to supply him with the requisite patterns. With these instruments the plug is cut down level with the margin of the cavity; then with slightly blunted pluggers, pressure is made around the center border of the filling. The edges trimmed of all roughness. The plug must be trimmed so that the antagonizing tooth will not strike upon it. [*Dent. Reg. of the West.*

ARTICLE XIV.

Artificial Teeth on the Atmostpheric Principle.

Mr. Editor: In the Recorder for December, one or two articles upon the above topic occur, which induces me to offer the following, in regard to my own experience in this matter, and if you see fit to give it a place in your periodical, you are at liberty to do so.

Having employed, in my own practice, for a length of time past, a similar plan to the one alluded to by yourself and correspondent, (the same in principle,) and with such results as lead me to hope much, ultimately, from the utility of the thing. As the processes I employ to attain it, are, I think, more simple than either of those described in the Recorder, I will here give them, and I doubt not you will agree with me, that an invention of this nature, is likely to be made useful in its practical bearing, in proportion as we can simplify the processes through which the operation has to go, to accomplish the end proposed.

My method is as follows:—When I have taken a correct impression of the mouth in wax, and obtained from it the plaster model, I take a mixture of prepared chalk, gum arabic and water, of the consistency of cream, and with the aid of a camel's-hair pencil, build upon that part of the plaster cast, representing the alveolar ridge, a prominence, say one-twelfth of an inch in width, of a conical form, and about the thickness of an American half dollar, to extend as far back as the first bicuspid on either side, in a perfect half circle, diminishing in thickness as it approaches its terminus, until lost in an even surface on

the cast. This crescent or half circle being allowed to incline a little inward toward the point where the linings of the teeth would naturally terminate, or be joined, by soldering, upon the plate, and being partly covered as it would be by the base of each tooth on that part of the plate; it may reaidly be seen that but little, if any, objection could be urged, on the score of making the plate more cumbersome in the mouth. In fact, it is susceptible of being so arranged that this additional vacuum in the plate can scarcely be noticed by the wearer. A plaster model thus formed, enables the operator, at once, without the need of resorting to the old and tedious methods of using founder's sand, to make good and correct metal casts, as follows: Take a common iron ladle, melt five or six pounds of lead, then take the plaster model after all moisture is removed therefrom, and hold it in the lead until it is perfectly congealed, then, after allowing the metal time to cool, so as to handle, break out the plaster, and the hollow cast is made with which to mould the convex cast. After cleansing out the hollow cast, and giving the inner surface a coating of chalk, then place a narrow rim of sheet iron around the margin of the hollow cast, securing the outer edges with a mixture of plaster and sand; then pour a sufficient quantity of melted tin into this mould to fill it and the rim around it, and the two casts are made.

I have been thus minute, because I am inclined to think much time is wasted by many dentists, in using means for getting up casts, which are far more complicated, and which are not found to be any better in the result after all. In some cases where the mouth of a person presents, upon the alveolar ridge, an uneven surface, I have built up only where the depression occurred, thus elevating the one to the level of the other, thereby giving more symmetry and beauty to the case when finished, and still having the adhesive qualities of the plate sufficiently increased to answer a good purpose. In several cases of this nature, I have been well pleased with the result.

Other chambers or vacuums could, I am persuaded, be made to advantage in a plate, in addition to the one already described. For instance, say two separate ones—one on each

side of the plate, toward the posterior part of the alveolar ridge of the length of half an inch—commencing at a point about the center of the second molaris, and running in a transverse direction toward that point where the plate turns over the alveolar process.

This would doubtless increase the adhesion of the plate at its posterior base, and would, I doubt not, be worth the trial. This last, however, I have not made trial of.

With regard to the question of *priority* in the employment of this plan of using the atmospheric principle, I must conclude that we shall have to go farther back than we have yet been doing, in order to place the credit of *its discovery* where it belongs.

The gentleman in your city, to whom I am candid to say I take pride in acknowledging myself indebted for the first sugtion of the idea, is able to show, by an entry in his register, a case inserted in the mouth of a gentleman, as long ago as 1836, on this plan, and I am *not aware* that even he lays claim to the first discovery of the thing. Liberal minds are hardly likely to lay much stress on points like this, much less to be found *taking out letters patent* for discoveries in matters pertaining to a profession like ours.

Po'keepsie, *Jan'y* 10, 1848. W. A. PALMER.

[*Dent. Rec.*

ARTICLE XV.

The Food and the Teeth: Observations on the Inorganic Constituents of the Food of Children, as connected with the Decay of the Teeth, and the Physical Constitution of Women in America. Read before the "District Medical Society of the County of Mercer," 23d July, 1850, by James Paul, M. D.

The subject to which I have the pleasure of directing your attention is, not only in a physiological point of view, one of interest, but in its application to the preservation of health—the tendency to improve the general condition and physical

constitution of the human family inhabiting this great continent—a continent abounding, as it does, in all the productions which a bountiful Creator, in his beneficence, bestows on man—cannot be otherwise than of great and paramount importance.

At a period somewhat now remote, the celebrated naturalist Buffon, alluding to the animals of this continent, advanced the following opinions:—

1st. That the animals common both to the Old and New Worlds are smaller in the latter.

2nd. That those belonging to the New are on a smaller scale.

3rd. That those which have been domesticated in both, have degenerated in America.

4th. That, on the whole, it exhibits fewer species.

These opinions, Mr. Jefferson, in his "Notes on Virginia," undertook, and it is generally considered successfully, to controvert; yet, however repugnant to the general idea the opinion as to the tendency of those animals which have been domesticated in America from other countries to degenerate, it is an undeniable and much to be regretted fact, that the human family, and more particularly the female portion of that family, have declined in the vigor and strength of their physical constitution.

I wish not to be misunderstood: I say it is a melancholy fact, too well known to the observant physiologist, that increase of strength, and development of frame, have not been attained by the intermarrying of members of the human family of different nations on this continent; but the reverse is too observable: the physical frame of the female sex has degenerated—calling loudly for the aid of science to arrest an evil of so much magnitude.

Let us for a moment contemplate the female form, as seen on this broad continent. In no country in the world are children more fair and beautiful; and as the young girl grows up to womanhood, we see in her a full realization of that being

forming in the hands of Divinity, portrayed by the poet, as seen by Adam in his dream:—

> "Under his forming hands, a creature grew,
> Manlike, but different sex; so lovely fair,
> That what seemed fair in all the world, seemed now
> Mean, or in her summed up, in her contained,
> And in her looks;"—

We see this young and lovely being—the forehead well developed—the countenance, rather elongated, relieved of the harsher outline of some of the European nations—with fragile form, and small, yet well developed bust, flitting for a few short years among us, and then—yes, then there comes a change. Ere five and twenty summers pass, this flower begins to fade—the rounded form shrinks—the bloom of health decays; and if she escapes the fell destroying angel's death-like grasp, a wreck of former self remains.

Why should this be so? The robust of other countries come to this continent—they live in comfort—their food is excellent in quality—their progeny is like themselves—but even now, in the very first generation, does the degenerating process make itself manifest—the teeth begin to decay; and girls, while yet children, have to visit the dentist to have them cleansed, scraped, and plugged.

Now this brings us at once to the head and front of our subject; and if we can point out the first cause of this decay of what should be as strong as adamant, it may be the means of helping us in our investigation. That there is something radically wrong in our system of rearing the young, to which this misfortune is in a great measure owing, I am free to confess, is my firm opinion. I would indeed it were in my power in pointing out the evil, to be as successful in detailing the cause, that we may apply the remedy. Still, although perhaps unable to accomplish all I wish, my observations may not be without their weight, and induce others, more observant, more scientific, and more competent to the task, to follow up an investigation so fraught with advantages to our fellow beings.

It is certainly to be deplored that the females of this continent, descendants of European parents, should be so much afflicted with caries of the teeth—the decay of parts formed of substances which enter into the composition of some of our hardest minerals—marble, bone-earth, and fluor-spar; and this decay unfortunately occurs in early life—in girls yet at school; and many a young woman, ere she has attained a marriageable age, has had to replace the natural with the unnatural, though more enduring, enamel of the artist's formation. This ought not to be: God made all mankind alike; in no portion of the earth are nations found who lose their hands, or feet, or tongue or eyes; and there can be no cause why the inhabitants of this land should lose their teeth. It is not so in the olden countries from whence the progenitors of the present race have come; nor is it so in the West India Islands, which may almost be considered as part of this great continent. So excellent is the structure of the teeth of savage nations, that some tribes in Africa, I think the Mocoes and Mundingoes, file all the front teeth, so that they shall be separated and form sharp points, the better to tear the uncooked animal food.

One cause of this affliction is, in the mind of many, attributed to the great and sudden changes of temperature experienced on this continent—the thermometer rising and falling 20, 30, and even 40 degrees in twelve hours. But if attributable to these sudden changes, we know that sudden expansion by means of heat, or sudden contraction by means of cold, causes the particles of which bodies are composed to tear themselves asunder; consequently to crack, break, and fall in pieces. But this is not the case with the teeth of our females; a caries or decay commences most generally in the side of the tooth, extending to the enamel, which is sometimes involved in the destruction, at other times, it is left a crust or shell to snap and break off in small pieces, when unable to resist the pressure of whatever may be placed against it; besides, the teeth are for the most part sheltered from these sudden changes, and kept at a temperature nearly amounting to blood heat at all seasons. I do not think we can place the

general destruction of the teeth, and consequent affliction o the females of America, to this cause. I fear we must rathe look for it to constitutional weakness, and this constitutiona weakness to a deficiency of the inorganic or earthy constituents being taken into the system, more particularly at an early perio of life.

If I am correct in this opinion, and reason, philosophy, an a thorough examination of physiological facts in both the ani mal and vegetable economy, tend far to bear out these views, then if we would try and correct this lamentable state o things, let us commence at the very beginning, and make our selves acquainted by examining the structure and compositio of the teeth, and then we shall be more able to understan what is required to aid nature in their formation and conse quent preservation.

First, then, let us make ourselves acquainted with the struc ture and composition of the teeth. The teeth are nearly allie to bone in structure; both having earthy deposits, intermixe with fibres and cells of gelatine, which, by consolidation, give form and strength—in the case of bone, to bear the weight o the various parts, and afford protection to the different organ of the body ; and in the case of teeth, to cut and grind the foo required for the formation, support, and reparation of its variou parts.

Now, teeth are composed of three different substances, an these three are disposed according to the purposes required o them ; they are, *cementum* or *crusta petrosa*, *dentine*, (know as ivory in the tusk of the elephant,) and *enamel.* The *cemen tum* or *crusta petrosa*, corresponds in all especial particular with bone ; possessing its characteristic *lacunæ* or small cavi ties, and being traversed by vascular medullary canals, when ever it occurs of sufficient thickness ; it is the first covering o the young teeth, and may be said to invest the fang of the toot which enters the alveolar process of the jaw. The *dentine*, o ivory, consists of a firmer substance, in which inorganic o mineral matter predominates, though to a less degree than i *enamel.* It is traversed by a vast number of very fine cylindri

cal, branching, wavy tubuli, which commence at the pulpy-cavity, and radiate towards the surface. The diameter of these tubuli, at their largest part, averages about $\frac{1}{10000}$ of an inch: their smallest are immeasurably fine; so much so, that they cannot possibly receive blood, but it is surmised, that like the canaliculi of bone, they imbibe fluid from the vascular lining of the pulp-cavity, which aids in the nutrition of the tooth. The *enamel* is composed of solid prisms or fibres, about the $\frac{1}{50000}$ of an inch in diameter, arranged side by side, and closely adherent to each other; their length corresponds with the thickness of the layer which they form; and the two surfaces of this layer present the ends of the prism, which are usually more or less hexagonal. In the perfect state, the enamel contains but an extremely minute quantity of animal matter. In the center of the tooth is the soft pulpy-cavity, which affords a bed for the blood vessels and nerves which supply it with life and sensibility.

I shall not enter more intimately into the structure of the teeth, but may briefly state, that like all other structures of the animal body, the component parts are derived and deposited from the blood, by that mysterious and incomprehensible power that selects and deposits the necessary constituents in the formation of the several portions, according to the use required.

Now, in the composition of the teeth, we have first the division into organic and inorganic or earthy matter; and we find that the several substances which enter into the structure of the teeth, differ chiefly as to the earthy matter contained in each.

Chemical analysis of the incisors, or front teeth of man, shows that they contain, in one hundred parts of each, as follows:

	Cementum.	Dentine.	Enamel.
Organic matter, . . .	29.27	28.70	3.59
Earthy matter, . . .	70.73	71.30	96.41
	100.	100.	100.

These proportions will occasionally differ; in some indi-

viduals the organic constituents having less than here stated, amounting in the dentine only to 21. The analysis of bone, however, gives a much larger proportion, viz.

Organic matter,	32.56
Earthy matter,	67.44
	100.

Let us now take a more complete analysis, showing what earthy constituents enter into their composition. Analysis of the molar or grinding teeth of man, and of the bones of the arm and leg of a man of forty, show the following proportions :

	Dentine.	Enamel.	Bone.
Inorganic matter :—			
Phosphate of lime, with traces of fluate of lime,	66.72	89.82	54.61
Carbonate of lime,	3.36	4.37	9.41
Phosphate of magnesia,	1.08	1.34	1.07
Salts, &c.	.83	.88	2.35
Organic matter,	28.01	3.59	32.56
	100.	100.	100.

Thus we see the very great proportion of certain earths that enter into the structure of the teeth and bone of man, the chief substance being the phosphate of lime, familiarly known as bone-earth. We find, too, that whereas in ordinary bone the the phosphate of lime constitutes only 54 parts in 100, in the enamel of the teeth it is nearly 90 parts in 100; while the carbonate of lime in bone amounts to 9.41, in the enamel of teeth it is only 4.37 ; the enamel being literally almost a mineral in substance, having only 3.59 parts of animal matter in 100.

Thus the teeth, to be strong and durable, require a large quantity of earthy ingredient, particularly *lime*, to enter into their composition. Let us inquire whence it is derived; and for this we must examine the blood.

To allow of such deposits from the blood, it is first necessary that they should be held in solution in that fluid. You are no doubt aware that the blood circulating to every portion of the body, by means of the heart forcing a certain quantity, to the extent say of two ounces at every contraction, into the

aorta or great canal leading from the left ventricle, and which dividing and subdividing into innumerable branches, are made to ramify to every part of the body, until the extreme branches end in capillary tubes or vessels, the calibre of which is so small as not to allow the red globules or corpuscles of the blood to enter them, but which allows the serous portion to traverse every portion of the organised structure, holding in solution all those constituents necessary and requisite for the formation and reparation of its several parts.

In the serous portion of the blood, then, we find contained the constituents required for the composition of bone and teeth—analysis of 1000 parts of healthy human blood giving, according to M. Lecanu, the following proportions:

Water,	780.15	785.58
Fibrine,	2.10	3.57
Albumen,	65.09	69.41
Coloring matter,	133.00	119.63
Crystallizable fat,	2.43	4.30
Fluid fat,	1.31	2.27
Extractive matter, uncertain,	1.79	1.92
Albumen in combination with soda,	1.26	2.01
Chlorides of sodium and potassium; carbonates, phosphates and sulphates of potash and soda,	8.37	7.30
Carbonates of lime and magnesia; phosphates of lime, magnesia and iron; peroxide of iron,	2.10	1.42
Loss,	2.40	2.50
	1000.	1000.

We see by this table, if we subtract or take away the proportion of water, amounting to 780 parts, and the coloring matter, amounting to 133, we shall leave scarcely 90 parts of organic and earthy material, the salts and earths forming upwards of a 10th—the salts being in proportion to the earths as 4 to 1.

Having then traced the constituent portions of the bones and teeth to be in the blood, the next consideration is, whence are they derived?

Before entering on this subject farther, let us for a momen take a broader and more comprehensive view of what must b (most interesting to mothers, and) of great consequence to th well-being of the infant generation, in a short time—in a ver few years—to become in their turn, the mothers and fathers o another generation.

The question then presents itself, as to what is the nourish ment or food best adapted and necessary to the wants of a infant, that the foundation may be laid for a strong frame an vigorous constitution; for here, we must recollect, is the start ing point, in by far the majority of instances. We know tha in some cases disease is hereditary—that the offspring unfortu nately inherits from the parent, constitutional defects; but w also know that more misery, suffering and constitutional de rangement are entailed on children by want of care and im proper food in the first years of life, by which their hopes o health are blasted, and they are doomed to struggle through weary life, to be hurried at last into a premature grave.

Now, that the frame—that is, the bones, muscles and othe portions of the infant—may be fully developed, it is necessar that it should be supplied with nourishment containing all th constituents required for this important undertaking. And thi nourishment, by the all-wise ordering of Providence, is con tained in the milk secreted from the mother's bosom.

The infant is entirely dependent on the nourishment derive from its mother, and nature has wisely ordained that the secre tion from the mother is its very best food; for we find in th composition of milk—that is, healthy milk, derived fro healthy blood—all those ingredients we have hitherto traced a requisite in the formation of the bones and teeth, and not onl these, but every constituent required for the life and growth o the individual; milk containing the albuminous, saccharin oleaginous, saline and earthy compounds requisite and nece sary for the health, strength and development of the infa child.

How thankful ought we to be to the all-wise and bountif giver of all good, for this beneficent, this wonderful provisio

in nature, by which there shall be secreted from the mother, a fluid so important, having properties blended in intimate connection, to afford the requisite substances for the support, growth and development of her offspring.

An analysis of cow's milk gives the following proportions of the various constituents; that of human milk is not so elaborate, but contains the average of observations taken at fourteen different times from the same individual, by Simon.

Cow's Milk, by M. Haidlen.

Water,	873.00
Butter,	30.00
Casein,	48.20
Milk sugar,	43.90
Phosphate of lime,	2.31
Phosphate of magnesia,	.42
Phosphate of iron,	.07
Chloride of potassium,	1.44
Chloride of sodium,	.24
Soda in connection with casein,	.42
	1000.

Woman's Milk, by Simon.

Water,	883.6
Butter,	25.3
Casein,	34.3
Milk sugar and extractive matter,	48.2
Fixed salts,	2.3
	1000.

	Maximum of 14 observations.	Minimum of 14 observations.
Butter,	54.0	8.0
Casein,	45.2	10.6
Sugar & extractive matter,	62.4	39.2
Salts,	2.7	1.6

Now, although these amounts will no doubt vary, under every variety of circumstances, according to the *health*, *exercise*, *passions* and *food* of the mother, yet they show what I particularly wish to impress on your minds, that healthy milk contains all the requisites for the nourishment of the infant; but then it must be *healthy* milk, secreted from healthy blood, and that blood must derive these ingredients from the *food* consumed, otherwise they will be taken up from the structures of the body, and hence the havoc made in nursing females when a due allowance of proper aliment is withheld, and the shrunken body of the famished mother is drained to the last drop, to supply the cravings of the death-like and impoverished offspring.

I have said that the structure of milk, in quality and quantity, will vary and depend on circumstances. Now the mental state exerts a surprising influence on this secretion, and much more than is usually supposed. It may not be irrelevant to

mention a few of the cases recorded in our journals,* of the influence of strong mental excitement on this secretion.

"A carpenter fell into a quarrel with a soldier billeted in his house, and was set upon by the latter with his drawn sword. The wife of the carpenter, at first, trembled from fear and terror, and then suddenly threw herself furiously between the combatants, wrested the sword from the soldier's hand, broke it in pieces, and threw it away. During the tumult, some neighbors came in and separated the men. While in this state of strong excitement, the mother took up her child from the cradle, where it lay playing, and in the most perfect health, never having had a moment's illness; she gave it the breast, and in so doing sealed its fate. In a few minutes the infant left off sucking, became restless, panted, and sank dead upon its mother's bosom. The physician, who was instantly called in, found the child lying in the cradle, as if asleep, and with its features undisturbed; but all his resources were fruitless. It was irrevocably gone."

"A lady having several children, of which none had manifested any particular tendency to cerebral disease, and of which, the youngest was a healthy infant a few months old, heard of the death of the infant child of a friend residing at a distance, with whom she had been on terms of close intimacy, and whose family had increased contemporaneously with her own. The circumstance naturally made a strong impression on her mind, and she dwelt upon it the more, perhaps, as she happened at that period to be separated from the rest of her family, and to be much alone with her babe. One morning, shortly after having nursed it, she laid it in its cradle, asleep and apparently in perfect health; her attention was shortly attracted to it by a noise, and on going to the cradle, she found her infant in a convulsion, which lasted for a few minutes, and left it dead."

"A mother had lost several children in early infancy from a convulsive disorder. One infant, however, survived the usual fatal period; but whilst nursing him one morning, she had

* From Carpenter's Physiology.

been strongly dwelling on the fear of losing him also, although he appeared a very healthy child. In a few minutes after the infant had been transferred into the arms of the nurse, and while she was urging her mistress to take a more cheerful view, directing her attention to his thriving appearance, he was seized with a convulsion-fit, and died almost instantly."

These are interesting cases, and tend to show the great influence the mental affections exert on the secretion of milk, in rendering it deleterious in quality, and unwholesome to the infant.

Returning, then, to our subject, you will observe by the analysis, that cow's milk differs from that of woman in the proportions of some of the constituents, that it abounds more in butter, but particularly in casein, or cheese; and on the other hand, that human milk abounds more in the saccharine principle, or sugar of milk. Now, this points out a circumstance from which great benefit may be derived. It is of very frequent occurrence that infants are deprived of the natural nourishment of the mother, and diverse opinions are given relative to the food of infants by persons who really know very little about the matter; one recommends a milk diet, another that the infant must be fed upon starch and sugar.

Now, to enable the infant to receive a nourishment in every respect similar to the mother, the knowledge of the various proportions which we obtain by chemical analysis, enables us to rectify and produce milk very analagous to human milk from that of the cow, by diluting it with water in the proportion of about half as much again; that is to a pint of milk should be added half a pint of water that has been boiled, which will reduce the cheese principle to the proper proportion; add a small portion of cream to restore the proportion of butter, and then add sugar until the whole is distinctly sweetened, and we have a compound in every respect similar to the milk from the human breast.

To understand the subject of nutrition, allow me to explain to you, that food ought to, or must embody two great principles; one to nourish, the other to give heat to the body. And food,

when consumed, is applied to one or the other of these purposes. Now, in the process of digestion, the constituents of the food are separated, and arranged in three classes.

1st. All that portion derived from animal food, eggs, the curd of milk, the gluten or adhesive portion of wheat and other grain, and whatever in animal or vegetable food can be rendered into *albumen*—of which the best example that can be offered in illustration is the *white of egg*, which is in reality nearly pure albumen—and the principle is, therefore, called *albuminous*.

2d. All that portion of the food derived from vegetables, starch, sugar, &c., that can be converted into *sugar* in the process of digestion. This principle is, therefore, called *saccharine*.

3d. All the fat, butter, oil, &c., which, when deprived of the other substances, is left in the state of *oil*, and, therefore, called *oleaginous*.

Now, of these three, the *albuminous* is the *nutrient*, and the *saccharine* and *oleaginous* the *calorifacient*, or heat giving; and chemical analysis shows that they vary in composition.

	ALBUMEN.		SACCHARINE				OLEAGINOUS.
	Eggs.	Wheat.	Starch, Arrow Root.	Sugar from Starch	Sugar of Milk.	Cane Sugar.	Mutton Fat.
Carbon,	55.000	55.01	44.40	37.29	40.00	42.301	78.996
Hydrogen,	7.073	7.23	6.18	6.84	6.61	6.384	11.700
Nitrogen,	15.920	15.92					
Oxygen,			49.42	55.87	52.93	51.315	9.304
Sulphur,	22.007	21.84					
Phosphorus,							

You will observe that the albuminous or nutrient differs from the saccharine and oleaginous, in containing nitrogen, and sulphur and phosphorus, with carbon, hydrogen and oxygen, while the latter contains only carbon, hydrogen and oxygen—nitrogen being required in those compounds which give strength and formation to the frame.

Now, the albuminous, or nutritive, being that portion which affords nourishment to the body, contains those constituents

required in the first place for the formation and giving strength to the different portions of the body, and when fully developed, of repairing the general waste continually going on in the system, whether from the usual wear and tear, fractured bones, or the ravages of disease. And the saccharine and oleaginous—the calorifacient or heat-making—to keep up a continual supply of fuel as it were, that the body may be kept of a regular and proper temperature; for you are no doubt aware that there is a continual supply of carbon, or, in more simple language, of charcoal, required to keep up the natural temperature of the body; and what is not required for immediate use is stored away in the form of fat, to be called into action as occasion requires.

We have seen in the analysis of milk, that that fluid contains butter, cheese and sugar; consequently we can understand how an infant can thrive so well upon it—the cheese or casein* of the milk, containing the nitrogenised or nutrient principle, which together with the earths and salts contained in the milk, goes to form the bones, muscles and the different tissues of the body—the sugar, which we have seen by the analysis, contains a large quantity of carbon in its composition, going to keep up the temperature of the infant, while the butter, in the nature of fat, is stored away in a healthy infant, filling up every vacant interstice, causing a roundness and plumpness, the pride and of joy the happy parent.

Now, let us mark the difference of the babe that has been denied a milk diet, and is doomed by ignorance to be fed on starch and sugar. You will recollect that these two substances were composed of carbon, hydrogen and oxygen only. By a process of digestion which I need not here enter into, such food is converted into sugar, the carbon of which becomes the fuel by which the temperature of the body is kept up—there being

	Analysis of Casein from fresh milk.	Albuminous substances found in whey after coagulation with an acid.
* Carbon, . . .	54.825	54.96
Hydrogen, . .	7.153	7.15
Nitrogen, . . .	15.628	15.89
Oxygen, } . .	22.394	21.73
Sulphur, }		0.36

no principle in the food to give albumen, there is nothing taken into the stomach upon which the gastric fluid can expend its solvent powers; the infant is, therefore, much troubled with acid eructations, and the stomach becomes weak and irritable. The want of the nutritive constituent of the food, and the earths and salts, &c., necessary and essential for the formation of the bones of the teeth, show a lamentable deficiency in the child's development, and there being no fatty matter to be laid up, the body is emaciated, the countenance is ghastly, the flesh and integuments hang soft and flabby over the bones, no absolute disease can be detected, the child is ravenous and hungry, and the unfortunate babe descends to the tomb a spectre and an object of the most pitiful description. This is no fancy sketch, but one too often met with in the ordinary walks of professional life. And why is it so? Simply because the composition of the human frame, the component parts of our food requisite to produce that frame, and the process of digestion and nutrition is so little understood.

We now advance from infancy to childhood—and this is a period when the greatest attention is required in supplying nutriment to aid nature in the great work of developing the body. The child is now deprived of the maternal secretion, and dependent on food prepared for its use by the hand of man—perhaps living in a city, and deprived of pure and wholesome milk from the cow. And we know there is a vast disproportion in the quality of milk when the cow is country fed on the natural productions of the farm, and when city fed on slops and grain, the refuse of the brewery.

It is at this age that the great proportion of bony substance is deposited; those of the extremities are lengthened, become more compact and stronger, and the substance of the teeth is deposited in the cells of gelatinous tissue. How necessary is it, then, that this subject should receive the utmost attention of parents. It has hitherto been too much the custom to leave all this, as belonging entirely to nature—as a thing we had nothing to do with. We have been too much in the habit of considering that nature furnished her own materials, and man had

nothing to do with her operations. The potter cannot fashion the bowl without the clay, neither can bone be formed without earth. No, my friends, nature must be supplied with the material, which, although offered in the most incongruous forms, she has the power of decomposing, selecting from, and supplying for the various purposes required; one portion, as we have already stated, to act as fuel in keeping up the temperature; another portion she selects to add to the flesh, the muscles, skin and different tissues; and the earths which are held in solution, she carries away by vessels adapted for that purpose, and deposits them, atom by atom, until they are so compressed, so strongly impacted together, as to become what we call solid bone; and all this so wonderfully wrought, that, as we have seen, small tubes are left in the hard stony formations both of the bones and of the teeth, that nourishment may be supplied them, holding in solution the material of which they are composed, the natural waste and decay may be replaced, and injuries repaired.

It is of this nutrition, and of the earthy matter of which the bones and teeth are composed, a deficiency of which is attended with results so deplorable, that I particularly wish to arrest your attention.

To what can we attribute the calamity which too often befalls the young? I allude to distorted spines, where the bones composing the spine, instead of forming a column allowing the body to be erect and dignified, are zigzag in their course, causing one shoulder to bulge out, and the opposite side to bend or double upon itself. This deformity has been long understood to arise from a deficiency of *lime* in the composition of the bones of the vertebræ, allowing them to fall, press upon and injure each other, destroying the beauty of the fabric, and the health and comfort of the individual.

Now let us take a glance at the inhabitants of two countries, natives of which are no strangers on this continent. I take them as examples, because the food of the *common people* of those countries is well known to be of the most common kind. I allude to natives of Scotland and of Ireland—the principal

food of the one being *oatmeal*, and of the other *potatoes*. We have heard a great deal of the famishing poor of those countries, and particularly of the latter—of the misery and wretchedness seen in every hovel; and there cannot be a doubt that famine walked through the land, when the blight and rot despoiled them of their potato crop, on which, for so long a period, they depended as the great article of food. Now, allowing all this—allowing, in the *best seasons*, the chief article of subsistence has been potatoes for breakfast, dinner and supper; glad indeed, many of them, to get a little animal food once a week to dinner, or even far more seldom—I now ask, what number, in the thousands of emigrants from that country, who yearly arrive at our ports, are there that show a constitution weak, fragile, and wanting in physical strength? Many, no doubt, arrive, worn down by disease and suffering, and in the last stage of debility; but let them recover from that state, and the robust frame and healthy constitution will be again developed; the bones are strong, the teeth undecayed, and the muscular energy only wanting opportunity to display itself; in fact, when we wish to denote strength in woman, we use the familiar phrase, "strong as an Irish woman;" and all this from being reared on *potatoes*. But, then, if we examine the analysis of potatoes, we shall find contained in 100 parts of dry potatoes,

Carbon,	41.1
Hydrogen,	5.8
Nitrogen, Oxygen,	45.1
Ashes,	5.0

Here we see that potatoes not only contain the nutrient but the earthy constituents.*

* According to a memorial presented to the French minister, on the proportions of nutriment of the means of living, by Dr. Glaser, we find potatoes taking no mean rank.

100 lbs. Wheat bread contains 30 lbs. of nutritive elements.

"	Flesh	"	21	"	"	
"	French beans,	"	80	"	"	
"	Peas	"	83	"	"	casein and starch
"	Lentils	"	94	"	"	

But we have a stronger and more healthy race yet, from Scotland and the north of Ireland, who are generally descendants of the Scotch, and continue, in a great measure, the same means in rearing the young. Now, a principal, I will not say *the* principal food of the youth of Scotland, high and low, rich and poor, except in the larger cities, amongst those who class themselves as more refined and more civilized, but who number few in proportion, consists, for breakfast at least, of oatmeal—that is, porridge and milk; and milk, potatoes and wheaten, oaten and peas bread, or *bannocks*, at other times of the day. Animal food amongst the poor is a rarity; a meat dinner on Sunday *only*, being common. Even among the youth of the better class, butcher's meat, or animal food, is by no means a principal article of subsistence. And I would particularly remark, that *Scotch oatmeal*, (the oatmeal generally used throughout Scotland,) is coarse, and contains much of the bran which invests the oat—containing, as it does, a large proportion of the earthy constituents required for the production of bone. Analysis of 100 parts of dried oats gives,

Carbon,	50.7
Hydrogen,	6.4
Oxygen,	36.7
Nitrogen,	2.2
Ashes,	4.6

I may here casually remark, that the advantage to be derived from this wholesome food, has not escaped the observation of her majesty, Queen Victoria, who appears, in the multiplicity of her public duties, not to lose sight of the equally sacred duties of a mother; and we hear of her son, the heir to the crown of Great Britain, being as fond of his oatmeal porridge, as the meanest peasant child in Scotland.

I rather doubt, if parents generally have given to this subject the attention to which it is entitled. I trust, however,

100 lbs. Potatoes	contains	25 lbs.	of nutritive elements.		albumen, starch and sugar.
" Carrots	"	14 "	"		albumen with sugar.
" Beets	"	8 "	"		

that those who have followed me thus far, may be impressed with its importance. We cannot shut our eyes to the complaint which so generally prevails, of decayed teeth—and a moment's reflection will call to mind the number of the young and beautiful who are prematurely hurried to the tomb, ere yet the bud has expanded into the full developed flower. Nay, comparing the two countries, the statistics of life and death communicate to us also the important fact, that while the greatest mortality shows itself in England in infancy and childhood, on this side of the Atlantic, it is found at a more mature age.

Neither has the tendency of the physical organization of woman on this continent to degenerate, escaped the observation of one of our greatest medical philosophers in this country,* who regards this retrogression as a national calamity, and impresses upon his students the importance of the subject, and the propriety of their attention in attempting to arrest it; and he particularly specifies the great object to be gained in the use of bran bread, made from unbolted flour. On this head, I shall have more to say hereafter.

With these observations, let us now direct our attention to what can be offered in remedy of this evil.

We have already stated, that in no country in the world are children more beautiful or more lovely—healthy in complexion, quick, smart, and intelligent—active, sprightly, and playful in their disposition. Now, in the period from infancy until the child becomes mature—let us, at all events, say until thirteen or fourteen years, and even to a more advanced age—there is a continued growth—a continual deposition of organic and inorganic or earthy particles, which are required for the formation of bone, teeth, flesh, and every part of the human body. I have shown you that the essential ingredients for these several formations are all found in the milk of the mother; consequently, as long as the infant is deriving nourishment from the mother, she ought to partake of good, wholesome, nourishing food—that the blood, deriving these principles from

*Dr. Jackson, of Philadelphia.

the food, may be able to supply them in turn to the milk from which it is secreted. So long, then, as the child is thus nourished, so long is it safe, and the rudiments or foundation of a robust frame is laid. And if we are to expect, in future life, the stalwart frame of man, or the enduring, firmly knit, compact, and healthy physical constitution in woman, the organic and inorganic or earthy compounds of which that frame is composed must not be denied—Nature must be supplied, or Nature will fail.

It is not for me to dictate to any parent what shall be the food of his child—it is enough that I point out for their information, what may be required to give, what in common language is called "bone and sinew," to their offspring. It is necessary then that the food of children shall contain:

1st. Aliment, having the *calorifacient* or heat sustaining principle. And this is contained in quite sufficient quantity in the usual food—in milk, wheaten bread, potatoes, arrow root, Indian corn, (as mush, hominy, or corn bread,) in most vegetable matter, and in sugar.

2d. Aliment containing the nutrient principle. And this is contained in animal food—the lean of beast, bird, and fish—in milk, eggs, wheat, rye, potatoes, beans, &c.

And, 3d. Aliment containing the inorganic or earthy constituents—on which depends strength of frame, and from which are formed the bones and teeth of the individual. And these are contained in milk, eggs, animal food, and particularly in wheat, rye, oats, potatoes, &c.*

* On this subject, I extract the following from Carpenter's Physiology, p. 488. "These substances are contained, more or less abundantly, in most articles generally used as food; and where they are deficient, the animal suffers in consequence, if they are not supplied in any other way. Thus, common *salt* exists, in no inconsiderable quantity, in the flesh and fluids of animals, in milk, and in eggs; it is not so abundant, however, in plants; and the deficiency is usually supplied to herbivorous animals by some other means. *Phosphorus* exists also in the yolk and white of the egg, and in milk—and it abounds, not only in many animal substances used as food, but also (in the state of phosphate of lime or bone earth) in the seeds of many plants, especially the *grasses*. In smaller quantities, it

Of the inorganic constituents contained in wheat, (and the same may be said of the other *cereal* grains,) I have already alluded to the benefit to be derived from using bread made of unbolted flour. On this subject, allow me to refer to the difference of flour having much of the bran remaining, and superfine flour, or that in general use throughout this country, and on which Prof. Johnston has made the following curious but practical observations. Examining wheat and flour, as to the amount of the nutrient or muscular matter, the fat forming principle, and the bone and saline material, contained in grain in different states, he found that

	Musc. Mat.	Fat Prin.	Bone & Sal.
In 1000 lbs. of whole grain, there were	156 lbs.	25 lbs.	170 lbs.
" fine flour, "	130 "	20 "	60 "
" bran, "		60 "	700 "

Taking the three substances together, according to Prof. Johnston, of a thousand pounds, the three substances contain, of the ingredients mentioned,—

	Whole Grain.	Fine Flour.
Of muscular matter, . .	156 lbs.	130 lbs.
Of bone material, . . .	170 "	60 "
Of fat, ...	28 "	20 "
	354 lbs.	210 lbs.

Accordingly, the whole grain is one-half more nutritious

is found in the ashes of almost every plant. *Sulphur* is derived alike from vegetable and animal substances. It exists in flesh, eggs, and milk; also in the azotized compounds of plants; and (in the form of sulphate of lime) in most of the river and spring water that we drink. *Iron* is found in the yolk of egg, and in milk, as well as in animal flesh; it also exists in small quantities in most vegetable substances used as food by man—such as potatoes, cabbage, peas, cucumbers, mustard, &c. *Lime* is one of the most universally diffused of all mineral bodies; for there are few animal or vegetable substances in which it does not exist. It is most commonly taken in, among the higher animals, combined with phospho ric acid: in this state it exists largely in the seeds of most grasses, and especially in wheat flour. If it were not for their deficiency of *lime*, some of the leguminous seeds (peas) would be more nutritious than wheaten flour; the proportion of azotized matter they contain being greater. A considerable quantity of lime exists, in the state of carbonate and sulphate in all hard water."

than fine flour.* It also shows the very great proportion of *bone material*,—that is, *earthy constituents*,—contained in the bran: no less than 700, out of a thousand parts, or a *little more than two-thirds* of the whole. Now, by reference to the same work, we find, in a communication from a Mr. Bentz, the difference in weight of a barrel of flour, without the bran, and when only the outer coating of the wheat is taken off. He says, "The weight of the bran or outer coating would, therefore, in the common superfine flour, constitute the *offal* weighing only $5\frac{1}{4}$ lbs. to the barrel of flour, whilst the ordinary weight of offal is from 65 to 70 lbs. to each barrel of flour; showing a gain of from $59\frac{3}{4}$ to 65 lbs. of wheat in every barrel of flour." Now, if we estimate the earthy constituents to be two-thirds of the offal or bran, we must consider that there is an actual loss of these important constituents, which might be reserved, in every barrel of flour, of 40 lbs.

Again, if we estimate, (according to the average of the consumption of flour to the amount of population, as one barrel to each individual,) that every child shall consume annually only half a barrel of flour, then we find, that by the use of the superfine flour, as commonly used in families, the child is deprived yearly of twenty lbs. of those earthy substances which are required to form the bones and the teeth. When we speak of a child consuming half a barrel of flour annually, it appears a large quantity; but when we reduce the same to a daily allowance, we find that it is little more than 4 oz. or $4\frac{1}{3}$ oz.; and every parent must know that this would be a very small amount to limit children. Yet we see how large a quantity of the bony material would be added, if unbolted flour was used instead of the present superfine flour. I may here add, that the oatmeal used in Scotland, already referred to, contains the bran or inorganic constituents while the oatmeal used in England is deprived of it. Now this is a great loss of the most valuable constituents in only one of the principal articles of the food of children; and if we allude to another article, which is largely used on this continent,—I mean

* Patent Office Report, 1847, p. 116.

Indian corn,—(and I may also add the fat of meat, both of which, children, if allowed, will partake of very freely,) we shall find that both of these abound more in the calorifacient, or heat-sustaining principle, and for the deposition of fat, than the nutrient; and that they are quite deficient of the earthy material *of lime*—that material, on which so much depends the proper structure of the teeth. Analysis of Indian corn shows the following composition—as taken from Mr. Salisbury's prize essay—read at the New York Agricultural Society, for 1849:—

Whole Kernel.		Ash of the kernel, constituting about two per cent.	
Starch,	50.64	Carbonic acid,	a trace.
Sugar and extractive,	7.46	Silicic "	1.450
Sugar,	1.50	Sulphuric "	0.206
Fibre,	6.28	Phosphoric acid,	50.955
Matter separated from fibre,	0.05	Phosphate of iron,	4.355
Albumen,	8.64	Lime,	0.150
Casein,	1.70	Magnesia,	16.530
Gluten,	4.56	Potash,	8.286
Oil,	4.00	Soda,	10.908
Dextrine or gum,	4.84	Chloride of soda,	0.249
Water,	10.22	Organic acid,	3.400
	99.89		97.000

This is a most elaborate analysis—far more minute than any analysis we have had of any of the articles of food—in fact, more minute than satisfactory; for the analysis of the whole kernel does not exhibit any amount of inorganic constituent; and when the whole was converted into ashes, we find that the *lime* only amounts to *the one-sixth of one part* in a hundred. Now, on inquiry, I find, on the authority of a very intelligent miller of this city, that in grinding corn, the bran, or thin skin of the grain, is detained in forming it into corn-meal; consequently, it is deprived of even that portion more particularly containing the earthy constituents. This gentleman, in conversation, mentioned an important fact relative to this deficiency of lime in corn. To the best of my recollection, he observed, "This stands to reason, for, ten years ago, all the lower part of Jersey grew excellent corn, but would not grow wheat; but since

he introduction of *lime* as a manure, they have raised con-iderable wheat crops." Now the fact is, it is not the habit or ood of this plant, even had *lime* been in the earth; and mag-esia and the saline manures are recommended to the agricul-urist as best suited for its proper development.

It is generally looked upon as invidious, and one is more ikely to incur odium than to receive credit for saying one vord against a food which stands so high in public estimation, nd is so universally used over this continent. Yet it must not, or one moment, be supposed that I condemn the use of Indian orn, in its various forms of mush, hominy, bread or pudding, s an article of diet—far from it; but containing, as it does, a arge proportion of starch and fatty matter, rather a small pro-ortion of the nutrient principle, and quite a deficiency of the norganic or earthy constituents, I consider it as valuable, as a ight diet, for heat-sustaining purposes only, and therefore a lesirable adjunct *to other food*, containing more nutriment and due proportion of the earthy constituents.

As an example or illustration of the want of the nutrient rinciple in corn or corn-meal, I may here allude to the effects have seen in the West Indies; where, in a dearth of the or-linary provisions on which prisoners were fed, corn-meal was ubstituted: corn-meal and salted herrings, fish, &c., consti-uting their food. Now the effect was, that all the prisoners ost their natural strength; at the same time they became fat nd bloated, inclining to dropsy; and this was not the effect of ncarceration—for the prisoners were engaged in road making, rimming fences, &c.; consequently, in a healthy and exhile-ating employment.

In reference to our domesticated animals, it may be asked, vhy is corn so useful, as an article of food, to animals gene-ally—horses, hogs, sheep, &c.? I have already shown that he overplus of the calorifacient food, after what may be required or sustaining the temperature, is stored away in the form of at. Now, if we instance the horse: corn is generally, if not lways, given as an adjunct to his more usual food, hay. And ve find by analysis, that grass or hay contains not only the

nutrient principle, but the inorganic constituents required i
the formation of bone, &c.

One hundred parts of dried hay contain—

Carbon,	45.8
Hydrogen,	5.0
Oxygen,	38.7
Nitrogen,*	1.5
Ashes,†	9.0
	100.

Thus, the hay gives to the animal strength in bone an
muscle, while the corn supplies additional heat-sustainin
properties, and lays by, in the form of fat, the overplus as
reserve. The harder the horse is worked, the more corn h
can bear; the great proportion of the carbon being carried o
by the lungs, and the hydrogen and oxygen, as water, i
exhalation and perspiration. But if the same quantity is give
to a horse at rest, it overloads him with fat, which, in his case
accumulates more internally, or around the internal organs, an
will in course of time, induce disease; while in the pig, unde
similar circumstances, the fat is laid on externally, if I may s
speak, giving the rich fat pork of our markets. And here
would again remark, that no farmer would consider it neces
sary or essential to give corn to a young colt or horse, unti
required to work; nay, so careful is nature, in appropriating
just so much and no more of any constituent that may b
required, that the food of the young horse should be mor
nutritious than heat-sustaining, and that there shall be n
superfluity to store away fat, we find by analysis, that the mil
of the mare has little or no butter, in fact only traces of it, i
its composition.‡ What a lesson in the animal economy i

* Fifteen pounds of such hay containing oz. 3.095 of nitrogen.

† These ashes having a good proportion of lime.

‡ANALYSIS OF MARE'S MILK.

Water,	896.3
Butter,	Traces.
Casein,	16.2
Sugar of Milk, Extractive Matters, and Fixed Salts,	87.5
	1000.

here given, and what a practical illustration of the requirements of the young of that and other animals!

Again, it may be contended, that among the beautiful children we see on every hand, there is no want of those who are fat and hearty. It is not *fat* we want—it is bone and muscle—with so much fat only as shall give firmness to the flesh and plumpness to the figure. Fat, although it enters intimately into union with the other component parts of bone and muscle, cannot be transformed either into the inorganic constituents of bone or teeth, or into muscular fibre; these must be contained in the food consumed, in the first place, and thence transferred to the blood.

How necessary, then—how important it is—if we expect to give strength and vigor to the constitution, that the food, in the first years of infancy and childhood, when the formative process is going on, should receive some further attention than has hitherto been given to it; and if our youth—if our young females have hitherto been deprived of the necessary constituents for the full development of every portion of the body—can we wonder that woman should be the delicate and fragile being she is, or that by the decay which assails the teeth in early life, she should be deprived of an ornament of so much value? If this state of things can be altered—if the physical constitution of woman in America can be saved from further degeneracy—a purpose may be effected, of consequence, even in a national point of view; for it is to the healthy and vigorous constitution of woman that we must look for a race of hardy, vigorous and enterprising freemen.

In conclusion, I would briefly state, that this is a matter in which professional aid can avail little; it lies at the door, and must be the work of parents generally. It is for them to understand the great value to be attached to the food on which their children subsist—that it shall be wholesome and nutritious, and abounding in the earthy compounds so absolutely necessary to their proper development. If the chief articles of food have hitherto consisted of compounds made of superfine flour, corn-meal, and the fat of meat, let there be substituted

in their stead, bran bread, milk, eggs, the lean of meat, and potatoes; let more attention be given to the nutrient quality of the food;—let there be no deficiency of those articles containing the earthy material, that the bones and teeth shall not be deficient in those constituents so necessary in their composition and structure; and I should be inclined to hope that the evils which now exist will be lessened, and the physical organization of succeeding generations be equal to that of any nation upon earth.—*N. J. Med. Reporter.*

ARTICLE XVI.

A Piece of Bone and Teeth, which were dissected from between two Layers of Membrane forming the Walls of an Ovarian Cyst, taken from a Girl after death.

Eliza F——, aged twenty-two, single, was admitted at the Stoke Newington Dispensary, under Dr. Duesbury, Aug. 9th, 1850, with dropsical swellings, distending so uniformly the abdominal parietes, that it was difficult to diagnose whether it was ovarian disease or ascites. She complained of weakness and inconvenience from the weight and size of the body. She stated that she had been ailing for three years and upwards, during which period she had suffered much from pain in the left side of the abdomen, but had not perceived her body enlarging more than two years; that it had increased much more rapidly of late. She attended at the dispensary, and slightly improved in health, under tonics and diuretics, until a fortnight previous to her death, when she was attacked with peritonitis, and died on the 7th October. Mr. Price attended her for a considerable period for what he considered to be an ovarian tumor; and four months previous to her being admitted a patient at the dispensary, (in consequence of the lady with whom she lived as servant having suspicions of her being pregnant,) he sent her to Dr. Lee, who pronounced the uterus to be unimpregnated, and confirmed the previous diagnosis as to the existence of an ovarian tumor. On opening the abdomen, the

left ovarium was found to have been converted into a cyst, occupying the greater portion of that cavity, the viscera of which were pressing in every direction. A few recently deposited threads of lymph extended from its anterior surface to the peritoneum, lining the abdominal parietes; otherwise it was perfectly detached, except by its peduncle, which was not larger than the little finger, and consisted merely of the obliterated Fallopian tube, enlarged vessels and peritoneum. The cyst, together with the uterus and its appendages, were removed; and on opening the cyst, from three to four gallons of a cream-colored opaque fluid escaped, suspended in which were numerous flakes of fatty matter; it also contained a conglomerate mass as large as the fetal head at six months, consisting of hair (from four to five inches long) and this fatty substance matted together, besides many smaller pieces of the same substance. The cyst was divided by transverse bands, and also into pouches or smaller cysts, opening into the common cavity; adhering to the walls in places, were considerable quantities of the fatty matter, and attached hair, similar to that in the mass; and between two layers of the membrane forming the walls of the cyst, on the left side, was the specimen produced. The teeth are in every respect perfect, with their fangs inserted into the processes of the bone, resembling the alveolar processes of the jaws. The right ovarium was rather larger than usual, congested, and contained several small cysts, the size of a pea, filled with fatty matter. The uterus presented the appearance, in all respects, of that of a virgin, and healthy, with the exception of slight congestion, which might be merely post-mortem.

Dr. Bailie mentions similar fatty matter, hair, bone, and the rudiments of teeth, (but without fangs,) having been found in ovarian tumors, and under circumstances leaving little doubt that they had formed independently of impregnation. One case occurred in his own practice. In another, published in the *Philosophical Transactions*, this change was found in the ovarium of a child, whose age did not exceed twelve or thirteen years, with the hymen perfect, the uterus not increased in bulk, as is usual at puberty, together with the other signs of

puberty wanting. From the fact of the uterus being totally devoid of all those changes that follow impregnation, whether the fetus be developed within its cavity, or, as in extra-uterine fetation, within the ovarian or Fallopian tube, from the respectability of the girl's parents, together with the good character she herself had borne, and her anxious desire that her body should be opened, for the satisfaction of her friends, in consequence of the suspicion her appearance had excited, Mr. Denny was induced to believe that in this case there had been no impregnation. The consideration of this case suggests whether an ovum which the stimulus of the catamenial period caused to burst from the Graafian vesicles, and which was prevented from passing off with the menstrual discharge by the impermeability of the Fallopian tube, might not become adherent to the lining membrane of the ovary, or Fallopian tube, and thus obtain nourishment, setting in action a power which may be inherent in it, of developing the structures of the body, but in an incoherent manner, without the power to regulate the formation, or to produce a circulating system, or nervous center, necessary to the perfect development and independent life of the fetus; the latter power may emanate from the male, exerting an influence in some way analogous to the electric influence exerted in crystallization, of attracting and arranging the particles, so as to give a definite form, and thus to characterize the individuality of a salt. The statistical information furnished by the record of these cases, especially with evidence of existing virginity, may, by affording data for physiologists, enable them, at some future period, to throw light upon the functions of the ovary, and upon the elements supplied towards the formation, and the power exercised over the development of the fetus, by the sexes individually, and may also prove of practical importance, in removing the odium which a supposition of the necessity of impregnation in such cases as the above, might cast upon the fair fame of the patient.—*London Lancet.*

ARTICLE XVII.

Nasal Polypus.

Mr. Muggridge, in a communication to the Lancet, says: I was requested to see a female, S. R., aged twenty-two years, who had a nasal polypus, which was daily increasing in size, although it had been operated on twice, at intervals of eight months, at a public hospital. The first time my patient was admitted an in-patient for a month, as she informed me, to prepare her for manual interference; and from her statement it appears, that at each operation it came away in little bits—piecemeal. It is now eight months since she was last operated on: the polypus began to get very troublesome and large, filling up the left nostril, and producing headache, difficulty of breathing, and, as she described it, a great snuffling during sleep, thereby preventing any one sleeping in the same room. On introducing the probe, I found it extended to the upper part of the superior turbinated bone. I extracted it with the common dissecting forceps. I got a pretty firm hold, by introducing them as high as possible, and, by a gentle twist, and a sudden jerk, (as recommended by the late Sir Astley Cooper,) it came away entire. It was of an hour-glass shape; the lowest portion which could be seen is about four inches in circumference, attached by a peduncle to the upper, which is larger, and of a more irregular form; on each portion of it were small red vessels. My opinion is, that the lower portion only, below the peduncle, had been extracted before, which caused it to form again, while the upper portion adhered to its attachment. There was very little hemorrhage. Before leaving my patient, I stuffed the nostril with lint dipped in liquor aluminis. In the evening I again saw her, and found the lint had come out: she was much relieved, no headache, and she could breathe freely and easily through the nostril, which, on being looked into, appeared as free from disease as the other.

EDITORIAL DEPARTMENT.

Progress of Dental Surgery.—Since the commencement of the present century, Dental Surgery has progressed with most astonishing rapidity. Previously to this time, although much had been written upon the subject in France, and a little in England, its resources had scarcely begun to be developed. It was looked upon as a mere mechanical art, requiring but little preparatory instruction, and so few were engaged in its practice, that scarcely one person in a hundred had ever heard of a dentist. The operation of filling a tooth was rarely performed, the duties of the dentist consisting, for the most part, in the extraction of an aching tooth, the removal of tartar, and occasionally in replacing the loss of the natural teeth, with artificial substitutes, rudely carved from the ivory of the hippopotamus or elephant.

There were not in 1800, more than fifteen or twenty dentists in the United States, and nearly all of these were uneducated men, totally ignorant of the anatomy of the human body, and of the laws of health and disease, their whole stock of professional knowledge consisting in what they had learned from a few awkwardly performed operations, which in a large majority of the cases, had been productive of more injury than good to those upon whose teeth they had been performed. Gardette of Philadelphia, was almost the only medically educated dentist at that time in the western world, and almost the only one capable of treating the diseases of the mouth in a judicious and skillful manner.

Now, in nearly every city, town and village in the United States, the services of the dentist are almost as frequently sought as those of the physician; and instead of fifteen or twenty, we have twenty-five or twenty six hundred practitioners of dental surgery. But it must at the same time be confessed, that a large majority of those who call themselves dentists have not a single qualification entitling them to the appellation. They have assumed the claim, in too many instances, with but little or no preparatory instruction or study, depending for practice rather upon bold and unblushing impudence in setting forth pretensions to ability, which even the best informed and most skillful do not possess, than real merit. Still there are *very many* well educated and scientific men in the profession—men who would be an honor and ornament to any calling; and it is to the labors and influence of such individuals that it is indebted for the dignified position it now occupies in public estimation.

With the exception of the works on the diseases of the mouth, the last Dr. Gardette probably brought with him from France, the only treatise

on the teeth accessible to the profession in this country fifty years ago, were those of the celebrated John Hunter and Berdmore, and it is doubtful whether more than a single copy of either of these had found its way across the Atlantic. Then we had no literature of our own, and no facilities for the acquisition of a knowledge of the art as it existed at *that* time, and instruction could only be had at the expense of more time, labor and money than any one would have been justified in incurring. Consequently, experience was the only available teacher that could be had, and it would be difficult to estimate the amount of injury and suffering inflicted upon those who had the misfortune to fall into the hands of the self-taught practitioners of that day. Had they been as numerous as are the ignorant pretenders of the present, it would, if the field for their manipulation had been as ample, have been incalculable.

Now we have text books of our own, and translations and re-publications of nearly every European work upon the diseases of the mouth, of any value. Besides, we have four periodicals devoted to the interests of the profession, two colleges in successful operation, and a third has recently been chartered. The rapidity with which one improvement or discovery has followed another in the construction and application of dental substitutes, as well as in every other description of appliance employed in this branch of surgery, during the last twenty years, has at least placed *practical dentistry* side by side with the other branches of manual medicine.

But, notwithstanding the high state of excellence to which operative and mechanical dentistry have arrived, the art is not practiced by a large number even of the better class of practitioners, as successfully as it might be. It is too generally regarded as a mere mechanical pursuit, and as such, rather than as a science and art, it is chiefly cultivated and practiced. The Greek motto, "Not the theory but the practice," is too universally adopted by dentists. The latter, to be successfully applied, should be based upon the former. Although theory, so far as the treatment of disease is concerned, is deduced from, and its truth proven, by practice, it constitutes the only safe guide to it. To be able to fill a tooth in the neatest and most substantial manner, or to construct a dental substitute in a style of unsurpassed beauty, is not the only qualification necessary for the dentist. There are circumstances under which an operation upon the mouth cannot be *beneficially* or even *safely* performed. He should be capable, therefore, of discriminating correctly between the indications and counter-indications of treatment. He should know *when*, as well as *how*, an operation should be performed. Without such knowledge he will be liable constantly to commit the most egregious blunders, and in the long run, to do more injury than good.

We would not have it understood by what we have said, that we consider surgical skill and mechanical ability of *minor importance*, as they are both *indispensable* to a *good practitioner*; but what we mean is this, that

they would be exercised more efficiently if guided by a thorough knowledge of the science of health and disease. Entertaining this opinion, we cannot but believe that if dentists were as ambitious to excel in the medical sciences generally, as many, very commendably, are, in mechanical manipulations, the profession would have stronger claims to public confidence, and occupy a far more enviable and elevated position than it now does. A dentist cannot be too thoroughly skilled in the surgical and mechanical part of his profession, and every day furnishes abundant proof that most practitioners are sadly deficient in these departments, but as a general thing they are still more deficient in medical knowledge. This should not be, and we trust the time is not distant when most dentists will be as thoroughly accomplished in anatomy, physiology, pathology and therapeutics, as the practitioners of any other specialty of medicine.

Cheap Advertising Dentists—Extraordinary Verdict.—Nostrum venders with their empirical recipes of universal prescription, ushered into the world as they are by flashing papers, and many colored handbills, with counterfeit recommendations, followed though they be by the dead march to the graves with the groans of tortured thousands, are of the same grade with the class of practitioners above referred to. They are generally rejected *attachés* to the profession of medicine, whose slow and honorable industry lags too much on the road to fortune, to suit their abandoned rapacity for gold. Forcing themselves into its ranks by the use of such means as forcibly expels them, they rush into our miscellaneous world and belabor their willing victims, with millions of compound and simple pills, and wash them away in the tide of tonics and elixirs, which often, nay constantly, drench every community. And the chief virtue is that they they cure all for only two shillings.

The cheap advertising dentist does the same in a different way. He is often found driven from a more fitting employment in the capacity of a country blacksmith, or in the employment of some useful but less skillful of the mechanic arts, by sheer indolence and incapability, or more frequently by the inducement of an old sinner, who promises in the short space of thirty days, to qualify him for the practice of dental surgery, in all its branches. Thus we have those who migrate from the pocket of one community to that of another, depending only upon the *furor* they create, by flaming advertisements of cheap dentistry, being wholly and naturally incapacitated, even to approximation, to any qualification to practice.

Such we suppose to be the position held by the plaintiff, in the following singular and unjust suit: the verdict against the defendant is no less strange than deplorable.

From our European budget, it appears that a widow lady, had been attracted by the flaming advertisement of a dentist, who occasionally visited the place of her residence, and many other adjoining villages. In his advertisement, every possible success was promised with the most complete satisfaction to patients. After several visits, she arranged to have a set of teeth inserted, and in due time they were completed and placed in the mouth. Upon her return home she found all her hopes annihilated, the operation being a complete failure. Of course she again visited the person, who, upon examination, admitted the want of adaptation; accordingly a second set were made with a view of correcting the faults of the first. The second set however proved to be also a failure, with increased defects in construction. The price charged was twenty-five guineas for each set, which sums the defendant refusing to pay, the plaintiff brought an action for recovery of these amounts. In the course of trial, several dentists gave evidence pro and con. But a Mr. Rogers, as also a Mr. Hackley, both practitioners of eminence, pronounced a severe and entire condemnation on the pieces. The jury, notwithstanding, brought in a verdict of damages against the defendant for the full amount of both sets.

Another Drill Stock.—In the last number of the Journal we gave an engraving of a drill-stock recently invented by Dr. W. W. H. Thackston, of Va., and the October No. of the New York Dental Recorder contains an illustrated description of another gotten up by Mr. Chevalier, dental instrument manufacturer, of New York. The end of the instrument, in which the drill works, as well as the shaft, resembles the drill stock invented by Dr. Maynard of Washington, some years ago, but this is worked by a crank at the side of the instrument, above the handle, where the shaft terminates, while Dr. M's is moved by a nob at the end of the shaft, below the handle. With regard to the comparative merits of the two instruments, we are unable to decide, not having had an opportunity of giving Mr. Chevalier's a trial. Judging from the engraving, it is a very beautiful and ingeniously contrived instrument.

Growth of Hair, Nails, and Secretions of the Body.—There appears to exist a most astonishing similarity between the growth of the hair and nails, and the operation of the secretions of the body being simultaneous. The growth of the nails is singularly different, even upon the same individuals and upon the same hand and fingers. By the experiments of Berthold, it was found that they would grow upon the same finger a greater length in the summer than in the winter, also that it was much quicker upon the right hand than upon the left. The hair grows upon individuals of sixteen to twenty-four years of age about seven lines a month, which is accele-

rated by frequent cutting, and the reproduction goes on more rapidly during day than at night, and greater in warm than in cold weather. The quantitative formation of nail and hair coincides with the peripheric secretions, perspiration, &c., in this, that it increases in summer, and decreases in winter, whereas, the development and nutrition of the body is decreased in summer, and increased in winter, so that the weight of a man is greater in winter than in summer. The growth of the hair and the nails decreases in the night, which coincides with the decrease of the secretions, perspiration, formation of carbonic acid gas, urine, milk, bile, &c.

Reinhardt's Adjuster for Fractures of the Lower Jaw.—We have just been shown the above instrument, which, from its facilities of adaptation, and power over this unapproachable portion of the frame, give us ample scope to congratulate the profession upon so valuable and skillful an accession. It consists in a base, shaped like, and grooved for the reception of, the jaw as far back as the angle of the ramus. Through a staple fastened in the center, and projecting beyond the chin, is a steel rod, bent at sufficient length as to pass from below the chin to above the lower teeth, which sustains a plate, fitted to rest upon the teeth, and the lower end for a screw working against the base, so that the plate, when forced, presses them down to a proper position. This plate is held by a screw, for the purpose of using one either for the right or left side, or for the front only. Upon each side is a piece of the same wood, so shaped as to accurately fit the ramus and two-thirds of the jaw, graduated by a slide and screw, working in an upright, which has the advantage of moving, so that the power can be given in any direction, and thus securing any part of the jaw in any position whatsoever, making one of the most complete instruments used for the reduction of any fracture.

Although fractures of the lower jaw are not of very common occurrence, yet, as they do occasionally happen, we take pleasure in calling the attention of the profession to this most ingeniously contrived, and very valuable instrument. It, together with almost every variety of dental and surgical instruments, may be found at Mr. Reinhardt's, Light-st., Balto.

To Inventors of Dental Instruments, Chairs, &c.—We have received the intimation, from many gentlemen in the profession, of their having made different improvements upon instruments, chairs, and other mechanical appurtenances, seeking our opinion upon their various merits and probable adoption. To all such we would say, that by sending on accurately written descriptions, we would be happy to give them a suitable place in the Journal, thus giving the profession generally an opportunity of testing their merits, and judging of their value.

New Tongue Holder.—The use of such an instrument, in many operations on the mouth and the organs contained within it, is often indispensable to expedition and perfection. In cauterising the upper part of the œsophagus in chronic inflammation, also in tonsilitis, elongated uvula, and in many other diseases to which the posterior mouth is subject, requiring surgical interference, the tongue offers much impediment from its involuntary movements and unmanageableness. Likewise, in many dental operations, it presents considerable difficulty to complete such with safety and comfort to the patient. Many instruments have, from time to time, been invented to overcome this unruly member, but with various and incomplete success, from the fact that none, as yet, have been adopted by general use, and few have stood the test from others than their inventors. Mr. Jamet, dentist, of Baltimore, has recently invented an instrument for this purpose, which has certainly much to recommend it, in its simplicity and neatness, being formed of a very thin steel spring, three-eighths of an inch in width, and perhaps six inches in length, so bent as to press upon the tongue and underneath the chin, fitting the irregularities, passing from within the mouth, over and under the chin. We have used it in several instances, much to our satisfaction, and doubt not it would give equal pleasure to all who will try it.

Improved Forceps.—We have had placed upon our table a new instrument, or rather an improved one, by Dr. Levi S. Parmly, of New Orleans, for the extracting of wisdom teeth, which, in our opinion, is decidedly the most useful and valuable addition to our extracting instruments which has been made for a long time. The difficulties to be met in the removal of these teeth, are generally found in the roots having grown in a curve backwards with the ramus of the jaw, rendering extraction by the ordinary forceps for lower wisdom teeth, painful, tedious, and sometimes very difficult. It consists in adding to the beak of our ordinary forceps for this purpose, the blades of Physic's forceps, which are forced between the second molar and wisdom tooth, and in closing, the tooth is, at the same time, grasped by the ordinary cylinder-shaped beaks, and thus, with a trifling elevation, the tooth is thrown backwards and upwards, in completely accommodating the curved condition of the roots.

Dr. Levi S. Parmly has also shown us new patterns for scalers, the great merits of which principally reside in the fact, that from their admirable shape, only three are required for removing tartar from a whole set of teeth, under any description of irregularity. We certainly can see the best advantages arising from their general adoption, and take pleasure in recommending them. They can be procured from Francis Arnold, Sharp street, Baltimore.

Amount of Gold Foil used in the United States for Filling Teeth.—We hav been at some pains to ascertain the gross amount of gold foil used annuall in the United States, which, as nearly as can be learned, is abou 6,600 ounces, which, at $30 per ounce, about the average selling price would amount to $198,000.

Odontalgia.—We are requested by Dr. Robinson, to state, that in hi work, when speaking of the subdivision of "Odontalgia," he inadvertentl omitted giving Dr. S. P. Hullihen, of Wheeling, Va., the credit due to him as the first to publish the views therein set forth upon the subject.

Omitted Notices.—We are compelled, for want of room, to defer the publication of two bibliographical, and several other notices, designed for this number, until our next.

To Subscribers.—On the 1st of February we shall send bills to our delinquent subscribers. But we trust that all will thus save themselves a postage and ourselves a tedious amount of unnecessary labor, by immediately forwarding the amount, which will be promptly credited to their respective names; and as we intend to publish, in the April number, a list of those who have paid, we beg all our friends and subscribers to swell the list, not forgetting that, for the faithful and successful completion of our Journal, it must be sustained in this most necessary and potent manner. It is too near a fact, that most medical journals generally languish, fail and cease to be, from the want of prompt and well-directed support in this particular. Subscribers too often acknowledge the duty all are under of sustaining this great bulwark of science and professional advancement, but think, by the mere addition of their names, that this is all accomplished. But we would like to feel and know that our Journal is exempt from this great drawback and serious source of inconvenience. To those who have already remitted, we would return our most sincere thanks.

A Partner Wanted.—We call the attention of all those whom it may concern, to the following advertisement.—*Ed.*

Dr. G. McDonald, of Macon, Ga., proposes to take a partner in the dental profession. A gentleman highly skilled in his profession, especially in the various modes of doing plate work, can get a good situation by early application, accompanied with proper vouchers.

Dec. 24, 1850.

tainty of the nature of the distending cause; but the uniformity of the tumor, the sense of weight, the slight discomfort or pain attending it, and, finally, the discovery of fluctuation will determine the diagnosis.

The indication, of course, is to make an artificial opening and permit the escape of the contained matter, and then to make such applications to the lining membrane of the antrum, as will restore the natural secretion of the part.

There is no difficulty in making the required opening. The antrum is accessible at many points, and might be perforated almost any where without danger. Yet it is a very important thing to choose that point where the wall is thinnest, and where the perforation may be made with least pain and least injury to the parts, and which affords the most facility for the escape of the matter, during such length of time as an artificial opening may be necessary.

Jourdain, a French surgeon, who wrote very ably upon diseases of the sinus, recommended to the Academy of Surgery in Paris, that a sound should be passed into the antrum, through the natural opening. He represented that the operation was feasible, and being so, was, for many reasons, preferable to any other. Upon experiment, however, this mode of procedure has been found very difficult of execution in all cases, and altogether impossible in many, and it is no longer attempted.

The fangs of the molar teeth sometimes penetrate the cavity of the antrum, and generally their extremities are separated from it by a very thin bony partition. The cavity of the antrum is depressed posteriorly, and the position of the molar teeth represents the most depending part of it. It is, therefore, most advisable to make the opening through the alveolus of one of these teeth. Should one have been previously extracted, we should make the opening through its vacant alveolus; should all these teeth be yet in the jaw, one must be extracted, and of course, we should sacrifice a carious, in preference to a sound tooth. Should all be sound, it would be best to extract the second molar. Sometimes it will be necessary to extract two teeth, in

order to obtain sufficient room for such an opening as will be desirable.

Sometimes the extraction of the tooth will be followed at once by the discharge of the fluid; an opening having been made into the antrum by tearing away the fang. More generally, however, it will be necessary to puncture the floor of the cavity.

The instrument preferred by Dr. C. A. Harris, for whose opinion, in such matters, I have great respect, is a straight trocar. The point of this instrument having been passed into the alveolus, should be pressed against the bottom, in a direction towards the centre of the antrum. The intervening plate of bone, may then be easily pierced by a few rotary movements of the trocar. Care must be taken so to moderate the pressure applied, that the instrument may not, upon the giving way of the floor, be suddenly pushed across the cavity and made to wound the opposite surface.

Upon the removal of the instrument, a gush of fluid will follow. Should the opening not be sufficiently large to permit of the free passage of the thick matter which may be contained in the cavity, it will be easy to enlarge it.

Some surgeons advise that a bougie should be kept in the opening, others prefer a canula of lead or silver. Richter observes, that if a canula be left in, it should be carefully stopped, lest particles of food and drink should find their way into the cavity. Deschamps and Harris advise that the canula be secured to the adjacent teeth, and left in the opening. If a bougie be used, it should be removed two or three times a day, in order to permit the matter to escape.

If fistulas have previously been formed, they will generally close after the dependent opening has been made. Should they not heal readily, their closure may be facilitated by touching their callous edges with nitrate of silver.

Having removed the mechanical evil, by evacuating the accumulated fluids, we must accomplish a cure by such constitutional treatment as the case may require, and by suitable local applications to the lining membrane of the antrum.

At first, warm water may be injected, in order thoroughly to cleanse the surface of the membrane, and subsequently we may throw in astringent or mildly stimulating applications, such as port wine and water, solutions of sul. zinc, sul. capri, or even of nit. argenti. As the secretions are fetid, a weak solution of chloride of lime, or chloride of soda, may, be injected two or three times a day. Should the gums be inflamed, leeches must be applied from time to time, until the inflammation be subdued.

As the morbid condition of the mucous lining of the cavity may result from the irritation of diseased teeth or fangs, all suspected irritants of this kind must be removed.

In Mott's edition of Velpeau, I find the following remark—"If, as happens frequently, the sinus is distended by any liquid, its anterior wall swollen out in the form of a border under the cheek is, in general, so soft that a bistoury or scalpel penetrates it without any difficulty. The operation is then extremely simple. Having freely incised the superior part of this border transversely between the cheek and malar bone, I excite its inferior portion with a second cut of the bistoury. The loss of substance thus made, remains fistulous, and prevents the sinus from filling up a second time. The three patients which I treated in this way were promptly cured."

Should the teeth have been long previously lost, and the alveolus obliterated, the operator must choose between dissecting off the gum and boring his way into the antrum at the point already indicated, or performing some one of the several other modes of operation which have been preferred. Lamorier directs, in such cases, that we should penetrate into the maxillary sinus immediately below the zygomatic process, between the cheek bone and third molar tooth. This is the point which corresponds to the summit of the cavity, where the walls are thinnest. An assistant, provided with a blunt hook draws the labial angle outwards and upwards. The operator incises the fibro-mucous membrane, which covers the bone at the point designated, by means of a scalpel or good bistoury; then perforates the osseous wall with a solid pointed instrument, enlarges the

opening as much as he judges necessary, and finishes by introducing into it a tent of lint.

Other surgeons prefer the method originally suggested by Molinetti, first to divide the cheek between the projection of the malar bone and the suborbital foramen, then to penetrate through this wound into the interior of the sinus.

In a patient who had no longer any molar teeth, the idea occurred to Gooch of perforating the antrum highmoranium on its nasal wall, and of inserting therein a leaden canula.

A buccal fistula of the maxillary sinus suggested to Ruffel to penetrate that cavity with a trocar, and to compel it to come out above the gum, in order thereby to establish a counter opening. A seton was then introduced and kept in this passage during the space of six weeks with such benefit that success crowned the enterprize of the surgeon.

Cullison recommended that if the fluctuation should become perceptible at the vault of the palate, the artificial opening should be established there. Basch and Henkel have succeeded by means of a meche introduced through a fistula in the floor of the orbit, and brought into the mouth through an opening in the alveoli. Bertrandi proceeded in the same manner, with the exception of not using the seton, in a patient who could not open his mouth, and who also had a fistula in the orbitar wall of the sinus.

In the process of Weinhold, the surgeon first directs his instrument to the upper and outer part of the canine fossa, directs it obliquely downwards and outwards, carefully avoids the branches of the suborbitar nerve, perforates the sinus and then leaves a roll of lint in the wound. If the sinus has no other issue, Weinhold recommends that we should perforate it through and through, either by pushing the first instrument through the palatine vault into the mouth, or by means of a curved needle above the alveoli, when we wish to place the counter opening external to the gum. An eye which both instruments here enables us at the same time to pass through the sinus the conducting thread of a meche of lint destined to perform the duty

of a seton, and which may be smeared with any proper ointment.*

The disease we are considering is not by any means serious, as it depends upon slight and generally temporary alterations in the antral membrane. Recovery, however, is slow, and we must not expect to accomplish a cure under a period of several weeks.

Inflammation.

The lining membrane of the antrum may be inflamed from a variety of causes. Severe blows upon the face, injuring, perhaps breaking, the external walls of the cavity; cold acting for a long time upon the face; the accumulation of mucus within the cavity, undergoing degeneration, and becoming irritating to the surface upon which it rests—all these may, occasionally, induce inflammation of the sinus. But, undoubtedly, the most common cause is found in the diseases of the teeth, gums and dental periostea, which are communicated to the lining of the antrum.

The chief symptom of inflammation of the sinus is a dull, continuous pain in the upper jaw, gradually becoming more severe, spreading to the border of the alveolus, and seeming to fix itself in the roots of the molar and canine teeth. It sometimes occupies the whole side of the face, extending to the orbit and frontal sinus. The inflammation may begin in the teeth, and gradually extend to the antrum, in which case the severer and more paroxysmal pain of tooth-ache will accompany the duller, deeper, more continuous ache of the antrum. As the pain increases, fever is developed, which will be more or less considerable, according to the degree of the inflammation and the sensibility of the patient.

Inflammation of the sinus can hardly be confounded with engorgement. In the latter case there is swelling of the bones, and in the former there is pain from the commencement of the

* Mott's Velpeau's Surgery, vol. iii.

attack. In fact, it cannot be mistaken except for inflammatory odontalgia, affecting the roots of the molar teeth; and from this, if these teeth be decayed, it cannot always be distinguished.

In inflammation of the antrum, we must use leeches to the gums, and, unless there be some good reason for omitting it, general bleeding from the arm, saline cathartics, and, in short, the whole antiphlogistic means. Opium may be used freely to lull the pain, and warm applications, by vapor or poultices, may also be tried.

If, however, there be pain which seems to be similar to toothache, and if some of the teeth, especially the molars, be diseased, and especially if one or more of them have been in the habit of aching, no permanent cure can be expected without removing them.

For the most part, however, we ought not to attempt this operation while the inflammation is unsubdued, as the injury inflicted by the violence of extraction must increase the vascular excitement of the part, and aggravate the distress of the patient. When the inflammation has been subdued, and the morbid irritability of the parts has subsided, the mouth should be carefully examined, and all diseased teeth removed.

Suppuration.

The inflammation of the mucous membrane of the antrum generally terminates in resolution; sometimes, however, it ends in the formation of pus, or suppuration.

When such is unfortunately the case, the pain gradually becomes less intolerable, and finally ceases in a great degree. The fever subsides, the patient may feel some rigors, and instead of acute pain there is felt a throbbing sensation in the part. If the outlet of the sinus be open, pus will escape into the nostril, and unless it finds a free vent, some pouting will, after a while, be perceived in the alveolar border, or a bony protrusion will be noticed upon the cheek.

Suppuration of the antrum may occur without preceding ac-

tive inflammation. Some cachectic habits are exceedingly prone to a slow, feeble inflammation, which is not attended by acute symptoms, and is apt to end in the formation of ill conditioned pus, and frequently in ulceration of mucous membranes. This kind of suppuration is not uncommon in the antrum, and the inflammation preceding it is not unfrequently unperceived until the greater mischief of suppuration or ulceration has been accomplished. Even after suppuration, the true nature of the evil may be unsuspected; the more so, that the preceding inflammation has been unperceived.

When there is dull, continuous pain along the border of the sinus, apparently not depending upon caries of the teeth, if there be swelling of the sinus, especially if the patient be of a strumous habit of body, we may suspect suppuration of the sinus. Should pus escape into the nostril, of course the diagnosis will be complete.

If there are any carious teeth, they should be removed. They may be the cause of the pain; they may even be the cause of the suppuration. In any case, their presence is mischievous, and, moreover, we must have access to the cavity through the alveoli.

The treatment must be similar to that recommended for mucous accumulation. Should the disease be the consequence of general ill health or depraved constitution, the proper constitutional means must be employed. The mouth must be cleared of decaying teeth, and the patient must avoid exposure to cold.

Caries, Necrosis, and other Morbid Conditions of the Bony Walls.

Caries is an affection of the bone, somewhat analogous to ulceration of the soft parts. In this disease there is loss of substance, causing, for the most part, irregular perforations of the osseous structure, giving, in many instances, a honeycombed or worm-eaten appearance; at other times the destruction may appear in a continuous superficial excavation. There is a discharge of a dark, fetid, sanious pus, and frequently a

growth of fungous granulations shooting up from the excavations.

The bones, though hard and dense, are vital structures. They are supplied with blood-vessels and nerves, and cellular tissue. They are capable of growth and reproduction, of absorption, and separation of dead from the living parts, by a vital process. Of course they are subject to disease—and to diseases only differing in appearance from those affecting softer structures, by the necessary modifications resulting from the peculiar density of the osseous structures.

Caries may occur in bones from the same causes which induce ulceration in the soft parts. Any thing which lessens the vitality of the parts, diminishes its nutrition, or causes excessive intersticial absorption, may cause caries.

External injuries may be the exciting cause, though far more commonly productive of *necrosis*. Long continued inflammation or irritation of neighboring parts; inflammation of the periosteum, and, above all, certain constitutional vitiations, are causes of caries.

Scrofulous persons, and those whose fluids are tainted with the syphilitic poison, are most apt to engender this and other diseases of the bones.

Generally, a fistulous ulcer, somewhere in the vicinity of the carious bone, will discharge the dark colored, fetid and often bloody pus which I have mentioned, and this will generally be a sufficient evidence that caries lies beneath. M. Strack, however, is quoted by Jourdain, as having met with an ulcer in every way similar to those usually marking caries, which was, in reality, unconnected with any disease of the bone.

When the finger can be brought in contact with the bone, which, however, can rarely be the case, the roughened feeling of the surface will at once determine the diagnosis. When this kind of examination cannot be made, a silver probe may often be passed to the bottom of the fistula, and the rough, grated surface of the bone perceived. Very often, however, the canal through which the pus escapes is too tortuous to permit of satisfactory exploration.

If caries be not checked, it will end in *necrosis*, or complete death of the diseased bone; caries, however, is not necessary to necrosis, for the latter may occur without being preceded by the former.

Necrosis may be caused by any means which destroys the nutrition of the bone or any part of it. These causes are sometimes external; more commonly, perhaps, they depend, at least for their predisposing cause, upon constitutional vitiations, or defects of nutrition consequent upon general pravity.

When the walls of the antrum or alveoli are carious or necrosed, the soft parts adjacent inflame, ulcerate, and discharge a fetid, sanious or ichorous pus. Sometimes the gums lose their vitality, become gangrenous, and are slowly separated by sphacelation.

Dr. Harris observes, that it frequently happens, that while caries is preying upon the antrum, its walls become softened to such an extent that they may be bent. This alteration of the bone, as well as the caries and necrosis, are, he says, in almost every instance, preceded by some other affection of the antrum.

Caries and gangrene of the antrum are very distressing affections, as, even when there is vitality enough in the bone to check the caries or throw off the sequestrum, the process is very slow; the fetid discharge of pus and the extreme sensitiveness of the inflamed and fungous soft parts, produce great misery to the sufferer, and excite the lively sympathy of all who witness his distress. The severest operation, which promises relief, will commonly be endured with patience by the unhappy victim of so protracted and intolerable a disorder.

It is not always easy to detect the existence of caries in the antrum, as the symptoms manifested by the surrounding parts, or detected through them, are similar in different affections. Should sanious pus make its appearance, we may generally infer the existence of caries; but in a few instances, the pus has been of a normal character and appearance, and though the presence of the pus, in appearance such as commonly attends caries, may satisfy us that such a state of the bone exists, the absence of such pus is not equally satisfactory evidence

that the bone is entire. The exfoliation of pieces of bone woul of course dispel all doubts as to the nature of the disease.

By probing where there is an ulcer, or by making an artif cial opening where none exists, we can gently introduce a blu probe and explore the suspected bone.

When the alveolar border or floor of the antrum is the sea of the caries or necrosis, there is little difficulty in ascertainin the seat and nature of the disease.

The swollen and purplish appearance of the gums will attrac attention to the alveolar border: and soon separating from th sockets, ulcerating and sloughing, they will lay bare the dis eased bone, and expose the true character of the disease.

"When situated in the floor of the antrum, the rough denude bone may be easily felt with a probe or stilet, introduced throug the fistula in the gums or alveolus of a tooth from which th matter is discharged."—(Harris.)

Whatever may be the remote causes of caries and necrosis of the antral bones, the immediate cause is defective nutrition, resulting from disease or destruction of the periosteum; and among the most common causes of periosteal disease, are the irritation produced by diseased teeth, and that caused by the action of fluid detained in the cavity.

The first step towards cure, must be to evacuate any mucus which may be distending the antral chamber, and to remove any diseased teeth which may be suspected of causing irritation.

The following case reported by Deschamps* will serve to show that I have not laid unnecessary stress upon the agency of diseased teeth, in the production of caries of the maxillary bones.

Mr. Martin the elder, who enjoyed at Lyons, a well merited reputation, communicated to me the following case:

M. D. had a carious tooth in the upper jaw of the left side. A dentist having refused to extract it, a violent inflammation occurred in the alveolus, and subsequently was communicated

*Traité des Maladies des fosses Nazales et de leurs sinus.

to the maxillary sinus. The result was a deposit of matter in the cavity of the antrum, and consequently a necrosis of the greater part of its anterior and inferior wall.

When the patient called upon M. Martin, he was passing a bloody and very fetid matter through his left nostril. The posterior part of the alveolar border felt denuded, and was covered with fetid mucus. Externally a considerable tumor occupied all the left side of the face, from the orbit to the border of the lower jaw. The appearances fully satisfying Mr. Martin as to the nature of the affection, he decided to attempt the extraction of the pieces of necrosed bone, in order to open a way into the interior of the sinus, and explore the state of the lining membrane.

By the aid of the elevator, he detached a fragment about ten lines in length, which appeared to belong partly to the alveolar border, partly to the palatine and partly to the malar apophysis.

In the meantime, carrying his finger into the opening he had made, he perceived yet two or three rough points, which led him to believe that he had not yet got away all the fragments. He postponed further efforts to the next day. Then he took away another fragment which appeared to belong to the anterior wall of the sinus, and which was larger than the piece previously removed. After this he could find no more asperities, and he assured the patient that the operation, so far as the extraction of bone was concerned, was completed. No fungus could be perceived, and after the first day, the discharge of pus through the nostrils and mouth had nearly ceased.

In less than five days, the tumor of the cheek had subsided: the patient suffered no pain, and his breath ceased to be fetid. The only remaining inconvenience was an imperfection of speech, which resulted from the communication between the sinus and the mouth, and which would be remedied when the opening of the alveolus should be closed either by the junction of the gums or reproduction of osseous matter.

Dr. Francis, of New York, describes a form of this disease which occurs in infants in hospitals, and under circumstances when the nutrition is impeded, as by scrofula, unwholesome air,

insufficient aliment, &c. The disease frequently begins at th edge of the gums in contact with the incisor teeth. The so parts become tumid with hardness and pain. Sometimes th greater part of the side of the face assumes an erythematous as pect without any premonitory signs; and this is subsequent ly marked by spots of a dark purple or brown color. Sometime the part becomes speedily sphacelated, sloughing commence and emits fetid exhalations. The tongue is loaded with foul sordes, and the breath becomes exceedingly offensive, whe coma will supervene and death suddenly ensue. In othe instances the teeth will become loose in the commencemen of the disease, and not unfrequently drop out on the slightest ex- ertion or motion of the jaw. The necrosis in some cases, wil involve full one side of the jaw, and the ulceration extend equally over the soft parts and affect the alæ nasi, the nose itself and the cheek nearly to the orbit of the eye. Very soon the sphacelated flesh falls in, and the internal structure of the mouth will be exposed, while the lips will become tumid, painful and dis- colored. These mordid changes, to a greater or less extent, are found to involve, very speedily, the teeth, alveoli, mucous surfaces and cheeks. The disease is very dangerous, and often rapidly fatal.

In these cases, the disease is evidently the effect of con- stitutional causes, and no local treatment can arrest the devas- tation. It was once fashionable for surgeons to make use of the most violent means for the cure of caries. The diseased bone was cut or burnt away, and the subjacent part carefully cau- terized with a red hot iron, in order to prevent the spread of the disorder. Such terrible means were rarely justifiable. When the disease is entirely local, and the constitution sound, all that the surgeon can do is to remove the cause of the caries, if yet existing—to lay bare the diseased part, in order to give egress to the fluids, and admit the atmospheric air, which is a stimu- lant to the parts—or any other moderate stimulant which may seem likely to hurry the process by which the great surgeon, nature, is limiting and repairing the injury. The diseased parts should be cleansed with astringent and detergent washes;

loose pieces of bone should be removed, and the patient rendered as comfortable as possible, and properly sustained by such nutriment as may be best adapted to his state of strength. Meddlesome surgery is bad.

When there is constitutional disorder, causing caries, or preventing the curative process, there will be no prospect of relief, unless the constitutional disease be removed. If the venereal poison has tainted the system, it must be counteracted by the specific means which so generally neutralize it. Should scrofula be the form of constitutional pravity, we must use, with far less hope, those general measures of regimen, diet and medication, which promise most in such cases.

When necrosis has taken place, the bone must be removed. By doing this, we do not interfere with, but assist nature, accomplishing at once, by mechanical means, what by the natural effort might not have been effected during weeks or months.

Should a very large opening be made in the floor of the antrum, it may not be closed by the unaided efforts of nature. In such case, it has been recommended to cauterize the interior circumference of the opening, in order to remove the edges, and induce greater activity in the parts. If the opening has been too great to permit of closure by the process of reproduction, we must make the best substitute we can for the lost parts, as it is imperatively necessary to close the cavity. "An obturator of gold should be accurately fitted to the parts, and secured by means of a broad clasp to a molar or bicuspid tooth; and if there be none suitable on the side of the mouth to which it is to be applied, the gold should be extended to one on the opposite side. If it be necessary to replace the teeth lost with artificial ones, these may be so mounted that the plate upon which they are set shall cover the opening into the maxillary sinus, and thus obviate the necessity of any other obturator."—Harris.

Softening of the Bony Walls.

Mollities ossium, or softening and increased flexibility of the bones, is due to a diminution of the normal quantity of the

phosphate of lime, to which earthy ingredient the hardness of the bones is due. This may occur either from absorption of the earthy matter, or failure of the arteries to deposit it in sufficient quantity. It is a rare disease, but it sometimes occurs in the antrum. Unless accompanied by a similar condition in other osseous structures, it may be regarded as the consequence of some pressure from within the cavity, either by a tumor or contained fluid. So far as the softening itself is concerned, it cannot be considered a subject for medical or surgical treatment.

Exostosis.

This affection is a hypertrophy or morbid growth of the bone, in which the phosphate of lime is deposited in unusual quantity, and a hard tumor occasioned. It is not painful of itself, but by distension of the periosteum and superincumbent soft parts, it may gradually become a source of great distress. Generally, however, as the tumor augments slowly, the soft parts adjust themselves to the increased bulk of the bone, and the patient escapes serious suffering. Much, however, will depend upon the magnitude and position of the swelling, and upon the attendant condition of the periosteum. Should this be inflamed and sensitive, it may occasion acute pain.

I have already described this kind of morbid growth, in treating of tumors.

The bones of the face have very often been the seat of exostosis, and many formidable operations have been performed for the removal of such tumors. A number of such cases and operations have been described, both by the older and modern surgeons.*

These tumors sometimes attain to great size. M. Beauprea presented to the French Academy, in the year 1767, an anatomical preparation, consisting of a tumor which occupied the whole right maxillary sinus, and several of the neighboring bones. Its largest circumference is about twelve inches. Th

* See Mott's Velpeau, vol. iii, p. 134.

upper part of the maxillary bone projects on the side of the orbit, and straightens the cavity; the os unguis is included in the mass of the tumor, and is nearly effaced. The nasal bones of the left side are displaced, and the right nostril entirely closed up; and the exostosis projects so much on the left side as to be nearly under the malar bone. "Exteriorly," says Bordenave, "the tumor had a smooth and polished appearance, and its upper part was very hard. Interiorly, the substance of the bone was spongy, and not unlike pumice-stone."

Sir Astley Cooper describes a case of exostosis of each antrum, which pushed out both eyes, and eventually destroyed the patient by pressure upon the brain.

Jourdain notices an interesting case of this kind, reported by M. David, chief surgeon of the Hotel-Dieu of Rouen, and adds the following, which came under his own observation:

Joseph Forcade, surgeon, had a son, who in early life gave promise of great vigor of mind and body. When six years old, he had the small-pox, which ran a most favorable course. When twelve years old, his father lanced a tumor at the inner canthus of the right eye, which suppurated for a long time after. Immediately after this, a prominence appeared about the middle of the nasal process of the right superior maxilla; and in spite of every application, steadily increased until it had attained considerable size. When the boy was fifteen, both maxillæ were equally enlarged; the bones of the nose seemed buried between the tumors, and its cartilages were so compressed as to impede breathing. The deformity was great, and at the age of twenty became, by the growth of the tumors, monstrous. The lower jaw became also exostosed, and acquired a very great size.

Though the deformity was shocking, it did not prevent the lad from travelling about and gratifying his naturally curious disposition. He was clever, lively, fond of good living, and particularly of stimulating drinks. At the age of forty-four he was seized with a malignant fever—his first sickness since infancy—from which he was slowly recovering, when he was seized with pneumonia, of which he died.

Upon post-mortem examination, says Jourdain, I could find on the face no trace of any muscles except those of mastication; but the skin seemed tightly drawn over the periosteum covering the numerous tumors. The head and face were everywhere exostosed, and as hard as marble. When the brain and soft parts were removed, the bones weighed in all more than eight pounds. The lower jaw alone weighed one pound, three ounces. The usual weight of this bone in an adult is one pound, nine ounces, showing an increased weight, in consequence of these exostoses, of six pounds, seven ounces. *The patient had never complained of pain, either in his head or face.*

The symptoms of maxillary exostoses are very obscure. We have already seen that the disease may exist to an enormous extent without causing pain, the soft parts gradually thinning and distending before the pressure. When pain does exist, that symptom alone is not sufficient to convince us of the presence of exostosis. We have no certain sign but the peculiarly hard bony swelling.

When the disease is accompanied by periostitis, which it is particularly liable to be when occasioned by syphilitic constitutional vitiation, the pain may be sufficiently acute.

It is in cases such as these, that constitutional treatment has been found to arrest the deposition of bony matter, and the remedies most successfully used have been precisely such as are most efficient in constitutional lues. When no such taint exists, little can be done except to remove the tumor before its extent renders an operation difficult or impracticable. In many instances this has resulted in permanent relief.

Fistula of the Superior Maxillary Bone.

Bones seem, notwithstanding their density, to be capable of inflammation, and even of abscess. I have already mentioned caries as a kind of osteose ulceration, and there are many cases on record which seem to show that pus may be formed within a bone, distend its layers and ultimately perforate its structures

and evacuate itself through a fistulous opening. Probably in such cases, the suppuration is in the cellular tissue of the organ, rather than in the proper osseous tissues.

Jourdain records ten cases of this character, of which I have selected the following:

Case I.—A lady suffered with inflammation of the root of an upper first bicuspis on the right side, followed by alveolar abscess. After the inflammation had subsided, the tooth was removed; but a fistulous opening still remained, emitting an ichorous discharge. After three months endurance of this, the patient took advice, had the fistula cut out and dressed with balsam. It healed, and for five months seemed perfectly cured. But the bone again swelled on the site of the old disease, and now extended as far as the second molar, was very hard, and was attended with deep seated pains: the gums were inflamed and the tumor increased daily.

Consultation was held, and opinions differed. Some thought it exostosis, others that the sinus was involved. The late M. Morand called me (Jourdain) into the case, and we concluded, upon careful examination, that by piercing a swollen spot in the gum just above the old fistula, we should come upon an opening into the interior of the bone. The introduction of an instrument to the depth of a line and a half caused a free discharge of sanguino-purulent matter, and the probe passed very freely into the cavity in the bone, the walls of which, above and below, seemed very firm. The socket of the extracted tooth had completely healed up.

M. Morand was in favor of an incision through the bone for the purpose of excising the distended portion of bone, but with that unprejudiced liberality which always marks the man of true wisdom, he yielded to my arguments in favor of the cavity. I introduced the hot iron into the fistulous opening three times in eight days, following it up with suitable injections, which frequently brought away small fragments of bone from the interior of the cavity. The alveolus was soon reduced to its natural size, and in forty-three days the patient was perfectly cured.

Case II.—Madame Massonet was referred to me by M. Moreau, of the Hotel Dieu, for a fistula above and between the first and second superior incisors. At the posterior part of the palatine arch there was a considerable tumor, without pain, softening, or change of color. From the summit of this tumor along the inner side of the alveolar ridge was a prominent line which seemed to mark the course of a fistulous canal from the external orifice to the tumor behind.

No further cause could be assigned than the fact that some years previously, the patient had received a severe fall, from which time the second molar became painful and gradually loosened. I removed this tooth, but without any benefit to the tumor. The other teeth were sound. Injections and other means had been tried at the time of the appearance of the external fistula, but unsuccessfully. I regarded this case as one of true abscess of the bone. I ventured, M. Morand approving, to enlarge the external opening and make an incision through the entire palatine tumor, which discharged only blood. Suitable injections and gargles were used, but to no purpose. I then decided to lay open with a knife the whole course of the supposed canal above mentioned, and touch it with mercurial water. On the third day, exfoliation of the parts thus touched exposed this canal. The subsequent treatment was very simple. The fistula was readily closed; and in six weeks the patient was sent home, perfectly restored.

Case III.—Madam Boillard had a fistula on the anterior surface of the superior maxillary bone, the result of an alveolar abscess of one of the incisors. Those teeth were so much worn away as scarcely to project above the gum, but were not at all carious. An operator, who was consulted, extracted the second right incisor, which was immediately under the site of the abscess, and subsequently the first incisor of the same side, but without benefit. He then gave up the case, and the lady consulted me.

I discovered by the introduction of the sound that the fistulous canal extended from the right second incisor in a tortuous direction, to the left canine, and as the two incisors on this

side were very loose, I extracted them and found their sockets much softened. By destroying this softened bone, I established a free and direct communication for the escape of the purulent secretion of the fistulous canal. By medicated pledges of lint, I healed the parts. There was some exfoliation of the alveolar substance, and a cure speedily resulted.

We see from this case, that caries is not the only cause of this disease. Irritation and inflammation of the dental pulp may occasion suppuration within the tooth cavity, which finding no vent in the direction of the crown, must escape at the extremity of the root, and may cause abscess, infiltration of the alveolar structure, and other grave injuries. In such cases a canal might be drilled through the crown, thus giving a direct escape for the matter, but if the suppuration have already extended to the alveolar socket, the extraction of the tooth is most advisable. *(Extraction is always most advisable.)*

Case IV. M. Petit sent to me a boy, who for a year past had been troubled with a fistula just above the left nostril. It had come without any previous dental inflammation or toothache, and had, therefore, been supposed by those who saw the case before me, to be consequent upon caries of the alveolus. A long and painful treatment based upon this diagnosis, served only to increase the ulcer. With my probe I could touch the root of the second incisor, which, however, had never given any pain or uneasiness. On pressing my probe up with some force, I gave vent to a considerable discharge of pus, yet there was no tumefaction of the gum or loosening of the tooth. With some difficulty I prevailed upon the patient to allow the extraction of the tooth. This done, the pretended cancer healed in eight days.

In this case there was evidently inflammation of the alveolar or exo-dental periosteum.

Case V. A person came to Paris for the relief of an affection which resulted from alveolar abscess over the fangs of a decayed first molar of the right side. After the first attack, although the abscess discharged itself freely, a sensation remained in the cheek, as though there was a small stone there. The second

attack though attended by a free escape of pus, left the cheek hard and swollen, and the eye-lid much distended with a peculiar clammy feeling in the region of the zygomatic and malar bones. I first saw the disease at this stage.

On examining the mouth, I found a fistula between the gum and cheek, which penetrated the latter in a tortuous direction, and discharged an ichorous fluid. I removed the fangs of the first molar, but only blood followed the extraction.

On the fourth day, fluctuation was perceptible under the eye-lid, and on the sixth day, I made an incision then in the direction of the fibres of the orbicularis muscle. As the swelling subsided, I used a compress bandage, taking care to keep open the incision till all deep seated suppuration had ceased. The subsequent cure was attended with no difficulty.

The student will find a number of other cases reported by Jourdain, whose work on the diseases and surgical operations of the mouth is a treasury of information upon these subjects. Though an old work, it is little known to the profession in this country, as it was not translated until the present year. An excellent translation, enriched with a number of very just observations, has recently been published by Messrs. Lindsay & Blakiston of Philadelphia. This translation is the work of a graduate of the Baltimore College of Dental Surgery; a young gentleman of much promise, whose extreme modesty has not permitted him to announce his name. The work should be in the hands of every surgeon, and surgeon dentist in the land.

*Ozena.**

This is a term applied to all these cases of fetid breath occasioned by inveterate ulcers of the primary air passages. These ulcers are sometimes seated in the antrum, sometimes in the nasal fossa and are frequently connected with and owe their fetor to caries of the bones. They are, therefore, more common in syphilitic and scrofulous subjects.

* Οζη, a stench.

The breath of persons afflicted with ozena is often so offensive as to render them almost intolerable to others, and the consciousness of the disgust which their presence occasions, is naturally a source of continual mortification and distress.

Where the ulcer can be perceived and reached, it should be touched with the nitrate of silver, and the application repeated until cure is effected. When no direct application can be made through the natural openings, as must be the case when the sore is seated in the antrum, an opening must be made as before directed, and a solution of nitrate of silver injected, if the caustic cannot be immediately applied to the part.

If the patient be tainted with syphilitic disease, no local remedy can be effectual. He must be placed at once under proper constitutional treatment, and this must be persevered in until the vice be eradicated. In case of scrofula, the same remark applies. Local remedies, however, are not by any means to be neglected. They may very much hasten the cure, and perhaps may render effectual, constitutional means which otherwise might be impotent.

Every expedient should be tried before leaving the patient to suffer the distress and serious inconveniences attendant upon such a disgusting disease.

Polypi and other Tumors.

*Polypi** are tumors of various consistencies and rapid growth, which appear in several cavities of the body which are lined by mucous membranes, but are most common in the nose, uterus and maxillary sinus. They also occur, occasionally, in the rectum and vagina. They occur much more frequently in the nose than elsewhere, and next to the nose, in the uterus.

The tumor growing into all the irregular cavities of the nasal fossa, &c. has sometimes an irregular form, which from a fancied resemblance to the animal of the same name, has originated its designation.

* Πολυς, many—πους, a foot.

Several varieties of polypoid tumors are described by writers. Mr. Pott thought one class of them always malignant, and another benign. The one like carcinoma being painful, causing constitutional irritation through morbid processes developed within itself, and tending to convert adjacent tissues into its own morbid structure, the other not painful, not causing any suffering, local or constitutional, except indirectly by producing pressure upon other parts or filling up cavities which are necessary to be kept open. In short, he considered that one class of polypi, the benign, are inconvenient or even fatal, merely by mechanical action; while the other, or malignant class, though equally troublesome by their pressure and obstruction which they cause, are per se pathologically dangerous to the health and life.

Deschamps describes four varieties, which he calls vascular fungus, mucous lymphatic, scirrhous and sarcomatous.

Dr. Warren classifies polypi as membranous, fibrous and vascular. The latter, he says, is rare. Jourdain recognised three kinds—one loose, pale, indolent and benign, also called vesicular polypus; another, hard, unyielding, livid and painful, marked with veins, and often hideous; and a third, fleshy, elongated and easily stretched.

Samuel Cooper observes, "Some polypi are red, soft and sensible, but free from pain, and exactly like a piece of healthy flesh. When this kind of polypus is of a softer consistence, semi-transparent, and of a pale, yellowish color in consequence of being less vascular, it is called the gelatinous polypus, and usually arises from the mucous membrane of the side of the antrum, or the middle of the cavity of the nostril between the upper and lower turbinated bone. No doubt carcinomatous tumors in the antrum have occasionally been confounded with polypi, but there is no good reason for believing as some have asserted that true polypi never originate in that cavity. Many eminent surgeons have testified to having met with true antral polypi.

When a polypus of the benign kind occurs in the antrum, it may escape detection until it has completely filled the cavity and begun to push its way into the nose and distend the walls of the sinus.

A tumor of the malignant kind might be suspected from the pain seated in it, and when enlarged sufficiently to press upon the bones, the twofold suffering produced by pressing and being pressed must cause greatly aggravated distress. The mechanical consequences of the continued pressure soon show themselves. The cheek swells, or rather is pushed out, the palate and alveolar ridge are depressed; the molar teeth are loosened, the gums become inflamed and spongy, the floor of the orbit is elevated; fistulous openings are often found through which sanious pus percolates, or the matter finds its way through the opening into the nose, and at length the tumor, pushing through the floor of the antrum, appears in the mouth, or forcing its way through one or both of the distended nasal openings is seen in one or both of the nostrils.

Of course, the parts subjected to this pressure and disruption, become diseased, and inflammation, suppuration, ulceration, caries and necrosis, may all be added to the list of secondary diseases incident to polypus. The causes of polypus are not satisfactorily ascertained. Probably they require some constitutional predisposition to render the parts where they appear capable of producing them, and when the susceptibility exists, any irritation may be the exciting cause of the morbid growth.

It is certain that diseased teeth and fangs must be regarded as the most common of the existing causes of polypus in the antrum.

The following cases from Jourdain are in point:

"In 1772, I had occasion to visit a shoemaker, living in the Faubourg St. Marcel, who had for some years had a kind of exostosis of the right superior maxillary. The tumor was as large as a medium sized apple, displaced the nose, deranged the palate, and threw the eye upward against the superciliary ridge, permitting the lids to open but slightly. The sinus had three fistulous openings: one below the malar process, a second near the bicuspids, and a third near the inner canthus of the eye. In none was there any discoloration of the skin, and alternately, from the two first, there was discharged an acrid reddish humor. Most of the teeth of the affected side were

lost; those which remained were sound, but much displaced by the tumor. The right nostril was obstructed by a polypus of a scirrhous hardness. In sounding the sinus through the fistulous openings, the instrument came in contact with fleshy masses in that cavity, some hard, some soft, giving out, when wounded, a bloody discharge, resembling wine lees. The nasal wall of the sinus was destroyed, but the maxillary bone was not softened.

"The disease seems to have had its origin in repeated attacks of alveolar abscess, the consequence of bad teeth, which usually terminated in fistula. Gradually the bone began to swell, and the nostril to become obstructed, till his appearance was such as I have described. Had I been suffered to operate, I would have removed all the teeth, good and bad, involved in the tumor, and then making a crucial incision through the cheek, would have exposed the bone, which, from its extreme thinness in this case, I might hope readily to remove. I would then have removed the exposed tumors from the antrum, by knife, cautery, or both combined, as occasion might suggest; looking carefully to the condition of the bone, and seeking, after the operation, to establish a healthy suppuration in the part.

"Case II.—*Polypus in the Right Sinus.*—In 1773, a lady, whose right cheek had been swollen and singularly hard for nearly two years, applied to me.

"The tumor was the result of successive inflammatory attacks of the first bicuspis and three molars of that side, only the fangs of which remained, and these were covered by a polypous tumor that had distended and softened the outer plate of the maxillary bone.

"I first made an incision down to the alveolar sockets, and after the arrest of the hemorrhage, removed the roots, twelve in number, each having at their extremity a morbid growth, showing that here was the chief cause of the disease. Their removal caused considerable hemorrhage. I examined the wound on the next day, and found that the bulk of the tumor lay between the plate of the maxillary bone, diminishing upwards, and terminating at the orbit.

"Between the cheek and gums were two fistulous openings, which discharged a dark, fetid humor. The diseased state of the bones decided me to remove the tumor by two vertical incisions through them. This space permitted me to introduce my finger into the sinus. Its membrane was swollen, and there was yet a portion of the tumor attached to the orbital plate. This, from its propinquity to the eye, I feared to cauterize with the hot iron, and therefore used spirit of vitriol, with a small quantity of corrosive sublimate dissolved in it, [nitrate of silver would be much better,] being careful to employ dry dressings, that the escharotic might not, by spreading, cause injury to the surrounding parts.

"After eighteen days use of the same, a healthy appearance of the membrane was induced, suppuration established, and at the close of the fourth month, after some slight exfoliation of bone, the patient was restored."

With regard to the treatment of antral polypi, it resolves itself simply into making an opening into the sinus, and removing the tumor.

Unfortunately, many of these morbid growths recur after removal, and grow with more rapidity than at first, and therefore it is necessary to destroy the mucous membrane upon which they are seated, so as perfectly to eradicate the disease. For this purpose, the old surgeons used the actual cautery freely. Probably the free application of lunar caustic would accomplish all that could be expected from the heated iron. It is often impossible to apply either so completely as to remove every particle of the diseased product; and if the tumor be a result of constitutional pravity, we, for the most part, gain little by the operation.

Dr. C. A. Harris thinks that in cases of malignant tumors seated in the antrum, the application of the *white hot* iron is indispensable to safety.

In remarking upon the bold practice of the French surgeons in the treatment of these affections, Mr. Thomas Bell commends their mode of procedure as worthy of praise and imitation, and expresses himself very severely against the timidity of English

surgeons, who have shrunk from the use of the actual cautery and have left the patient to die with a lingering and painful disease, without any attempt at relief.

Certainly, as life is rendered intolerable, and death inevitable, by these tumors, we are justified in using any means which may promise relief. I have already, (chapter nineteen,) described a malignant fungous tumor which occasionally makes its appearance in the antrum. When the disease is of the malignant character, a cure cannot be expected.

The mode of amputating the superior maxillary, as described by Mr. Liston, has also been given in the nineteenth chapter.

Insects in the Cavity.

The human body has many parasites inhabiting its various tissues. More than a score of these have been described. Some infest the intestinal canal, others are found in the heart and large arteries; some dwell in the muscular, others in the cellular tissue; some prefer the liver, others the kidneys, and some the sinuses of the head.

The mode by which these creatures are produced, has long been a subject of curious inquiry, but it is not necessary for me to discuss the subject. It is enough to know that they exist within the body, and often prove troublesome inmates. That the larvæ of insects do find their way into the maxillary sinus is proved by abundant evidence.

In the Memoirs of the Academy of Surgery, vol. v, p. 233, as quoted by Deschamps, it is recorded, that in the course of a disease of the maxillary sinus, there issued, from day to day, a considerable number of whitish worms, two or three lines long, some of which were living. The same author relates two instances in which long round worms were found in the maxillary sinus.

The most singular case of the kind is reported by Mr. Heysham, a medical practitioner of Carlisle, and may be found in Cooper's Surgical Dictionary.

In this case, the patient was a strong woman of sixty, who was

for many years subject to acute pain in the antrum, extending over one side of the head.

These pains never entirely ceased, but were more severe in winter than in summer, and were always subject to frequent periodical exacerbations.

The patient had tried anodynes without advantage, and had submitted to a mercurial course, by which her sufferings were aggravated. All her teeth on the affected side had been drawn. At length it was determined to open the antrum, though there was nothing to indicate abscess or any other disease in this cavity.

In four days no benefit had resulted from the operation. Bark injections and the elixir of aloes were thrown into the sinus. On the fifth day a dead insect was extracted by means of forceps. It was more than an inch long, and thicker than a common quill. The patient now experienced relief for several hours; but the pains afterwards returned with the former severity. Oil was then injected, and two other insects similar to the former were extracted. No others appeared, and the wound closed. She was much relieved for several months, when the pains returned worse than ever, and were particularly complained of in the frontal sinus.

We are not informed of further treatment.

Should worms be found in the cavity, they must be destroyed by the injection of oil or other liquids likely to effect the purpose.

CHAPTER XXI.

DISEASES OF THE PALATE.

The palate is often incomplete through congenital defect. It is frequently the seat of disease, which destroys its soft parts, and even its bones.

As the palate forms the vault or roof of the mouth, separating

it from the nasal cavities, and furnishing a most important part of the organ of voice and mastication, its diseases and deficiencies are of great consequence, exceedingly impairing the comfort and usefulness of the subject of them.

Congenital defects of the palate may differ very much in extent. Generally the deficiency is found along the median line, sometimes involving only the soft, sometimes also the bony structures. At times the fissure extends from the lips entirely along the median line of the roof of the mouth, presenting the appearance of the two lateral halves of the body not being united at this point.

Congenital defects, however, are not always so regular. Errors of formation may occasion an increase of the concavity of the arch, forcing the alveolar ridges too far apart, and producing deformity in the dental range. Sometimes, from an opposite condition of things, the alveolar borders may be brought more than usually close together. The teeth may be imperfectly developed, and their texture less dense than usual.

Mr. Stearns makes three classes of congenital fissure of the palate. The first class embraces all the cases in which the fissure extends through the velum, palate and maxillary bones, to the alveolar border, and sometimes through the whole extent of the median symphysis. This is usually complicated with hare-lip.

In the second class, the bones of the palate are apparently entire, though the cavity of the arch may be somewhat greater than usual, and the fissure extend a short distance into their posterior margins. In this case, the lesion is almost wholly confined to the velum palati.

The third class embraces those cases in which the fissure is confined to the soft parts, extending, perhaps, only a short way up into the uvula. This form of fissure is, probably, less frequently met with than either of the preceding.*

When the palate is defective, the voice is impaired, and the impairment is in proportion to the extent of the lesion. Some-

* Harris' Dictionary of Dental Science.

times it is almost entirely destroyed by the inability of the patient to utter distinct sounds. Nothing can be more distressing than this calamitous injury to the organs of speech, which combines the distress arising from the consciousness of ludicrous appearance with the inconvenience of difficult and imperfect articulation.

Interferenee with the voice is not the only evil attending defects of the palate. Mastication and deglutition are also impeded. Food, notwithstanding the patient's careful or instinctive efforts, will find its way into the nose, causing great unpleasantness, and depriving the unfortunate subject of the deformity of much of the pleasure of eating, which, after all that has been said and written in its disparagement, is unquestionably the most universally prized of all sensual gratifications.

When the deficiency is congenital, the young infant finds difficulty in nursing, but generally, with that preservative instinct which is given to the little helpless creatures, in such perfection as to supply abundantly all lack of experience in such matters, the child generally contrives to manage its defective organs so well as to obviate much of the inconvenience naturally attending the deformity. Instead of taking the nipple between the upper surface of the tongue and superior gum, &c., the infant places the tongue on the nipple, and presses it against the lower gum, closing the palatine fissure with the tongue, as with an obturator.*

The mechanism of nursing is perfected as the child advances in life; dexterity of course increasing with the constant use of the parts, until such a proficiency is acquired that solids are masticated, and speech is as far as possible performed. The mechanism of mastication as performed in such cases is then described by Delabarre. When the food is chewed, the aliment is conveyed between the tongue and movable floor which serves for a point d'appui to it, and then it is brought back between the teeth. Thus it is that the complicated operation of mastication and deglutition is performed without the alimentary

* Delabarre.

morsel getting into the nose, or if this does sometimes happen, it is the result of accident.

When perforations of the palatine arch occur in mature life through the agency of disease, the patient is in a much more unfortunate case than the subject of congenital deformity. The latter gradually habituated to the performance of mastication and deglutition with his imperfect organs, accomplishes these functions, if not well, yet with comparative comfort, while the former having been habituated to use the tongue differently, is not capable of adopting the mode of procedure applicable to his new condition, and consequently is continually passing his food and drink into the nose. If the teeth be not properly coapted, another source of difficulty and vexation is added, as the introduction of the food is thus rendered very troublesome.

If the velum and uvula be defective or wanting, deglutition is exceedingly difficult as the alimentary matters, instead of passing comfortably along the pharynx, are, to a greater or less degree, forced into the posterior nares. This is the case whether the lesion be congenital or accidental. Sometimes deglutition can only be effected by throwing back the head as far as possible and casting the food into the pharynx.

The inconvenience of imperfect speech is as serious as that of incomplete or difficult mastication and deglutition.

Mr. Stearns says, that perforation or fissure of the palate may render the articulation of some of the letters impossible, and at the same time vitiate the character of all the others. The indistinctness of utterance is usually proportioned to the extent of the lesion. Thus, when the fissure extends as far as the alveolar processes, the patient loses several of the letters, which another, with only a portion of the soft palate involved, is able to produce with considerable distinctness. In cases of fissure, particularly those of the more extensive kind, the movements of the tongue are comparatively limited, as the patient is instinctively aware that the very effort he should make in order to give letters their appropriate articulation, often serves to render the impediment more painful. So far, indeed, is this inac-

tivity of the organs sometimes persisted in, that speech becomes little else than the emission of a succession of vowel sounds, which, in lieu of receiving proper consonant adjuncts, are only made intelligible by the accompanying inflection, key, gesticulation and expression of countenance, all of which are, more or less, the vehicles of thought.* With the limited action of the tongue, nearly all the muscles concerned in the formation of articulate sounds, in a greater or less degree, participate, while the muscles about the nose, as the compressor nasi and depressor nasi are violently contracted for the purpose of closing the nostrils and preventing the escape of the sound. This gives a particularly disagreeable aspect to the features.

The most common cause of lesions of the palate is syphilis. This terrible disorder, when once it becomes constitutional, produces a number of strange local affections, differing very much from one another, all of them distressing, and some of them dangerous, and not unfrequently fatal.

Beginning as a local affection, usually a primary sore, syphilis may gradually poison the whole circulating fluids and cause defects of nutrition and alterations of tissue in various parts of the body.

The manner of effect produced by secondary syphilis, differs very much in different persons, as it is influenced by a variety of determining or modeling circumstances. Eruptions upon the surface, local inflammations, ulcers, augmentation and loss of parts, may all be occasioned by the penetrating and potent virus.

The soft parts about the throat are particularly apt to be the seat of constitutional syphilitic ulcers, and the bones of the palate are very frequently perforated or wasted by venereal caries.

It is very necessary, however, to be aware that palatine ulceration, caries and necrosis may occur from other than a vene-

*Observations on Congenital Tissue of the Palate, with some remarks on Articulation and Impediments of Speech, by Charles W. Stearns, Esq., Surgeon, London.

real cause. It would be terrible indeed to add the cruel susp cion of such a malady to the sufferings of a patient whose dis- ease, having no affinity to lues, should claim sympathy instead of begetting contempt and disgust. We must, therefore, be very careful to make no mistakes in matters of such delicacy. Moreover, the treatment of these affections must depend upon the accuracy of the diagnosis, and that which would be judi- cious in the case of syphilitic affection might be very improper under other circumstances.

When the true history of the case can be obtained, the facts will give much assistance in forming an opinion, but this can- not always be procured; we are, therefore, commonly obliged to form our opinion from the appearances before us.

The only constitutional vice, other than the venereal, which may cause a similar palatine devastation, is scrofula, and when scrofula is the cause of the affection, the prevalent vice will display itself elsewhere, in derangements of the lymphatic sys- tem, and the other affections which usually attend upon this general pravity.

Syphilis is more rapid than scrofula; and the local affec- tions produced by it are more painful. According to Mr. Hun- ter, venereal disease generally makes its appearance, in these parts, at once, in the form of an ulcer without much previous tu- mefaction. He describes the ulcer as a fair loss of substance, part being dug out as it were from the body of the tonsil (if seated upon it.) It has a determinate edge, and is commonly very foul, having a thick white matter like a slough, adhering to it, and not admitting of being washed away. All authors, how- ever, admit the extreme difficulty of distinguishing venereal affections in these parts, with absolute certainty, by merely local observation, and no appearance of sores about the palate, warrant us in *declaring* the disease syphilitic, without corres- ponding symptoms justify the suspicion. While this is the case, however, any suspicious sore will authorize us to try such remedies as are known to be efficacious in syphilis, it being much more dangerous to neglect a syphilitic sore than temporarily to maltreat a scrofulous one. No purity on the

part of a married female can always be satisfactory of her freedom from syphilitic taint, as, disgraceful as it is to human nature to make the confession, we are frequently compelled to recognize the ravages of the disease in these victims to the matrimonial tie, who are perfectly innocent of any impropriety. I need not say, that when the dentist discovers such a conditon to exist, though humanity will demand that in some way or other the cure be provided, benevolence, no less imperious, requires, that the unfortunate subject of the odious inocculation shall be kept in blissful ignorance of the nature of the malady.

Of course, where venereal or scrofulous disease is at work upon the parts, proper constitutional remedies must precede all mere mechanical attempts to repair existing damage.

The devastation of the palatine tissues, soft or bony, may sometimes result from the local irritation produced by dead teeth, &c. This, of course, can only occur in those enfeebled constitutions in which nature is not able to resist even a trivial morbid impression, but seems barely capable of maintaining a nutrition equal to the ordinary wear and tear of tissues.

That such cases do occur, is stated by Jourdain, Harris and many others.

Harris says,* "The local irritants occasioning the palatine diseases are dead and loose teeth, roots of teeth, salivary calculus, mechanical injuries, acrid humors, &c. The case of a lady of irreproachable character is related by Jourdain, in whom a scratch on the palate with a fish bone, caused a tumor, which suppurated and degenerated into an ulcer with hard elevated edges and a fungus in the middle." Dr. Cone mentions a similar case.

The following are reported by Jourdain :

Case I.—Mr. Noel had a tumor of the palate, which, on pressure, discharged pus through one fistulous opening on the outer side of the right alveolus, between the canine and incisor, removed some time since. The patient would not consent to and another in the socket of the second molar, which had been

* Dictionary of Dental Science, art. Palate.

proper measures in the first instance. The canine incisors and first molar became loose and were extracted: the alveolus around the site of the second molar sloughed away. The tumor still continued to enlarge, and some embarrassment was felt in the nostril: the patient then put himself under my care. The tumor, when lanced, discharged a very fetid pus, and I found, on introducing my probe, that a portion of the palate and maxillary bones were necrosed and almost completely detached. I removed them with ease: the one from the palate was the size of the nail of the index finger, that from the maxilla, larger. The removal of these sequestra, exposed the pituitary membrane of the floor of the nostril, as was proved by the sneezing excited by touching it on the lingual side. I dressed the wound for some days with dry lint, and then used gargles, &c. In twelve days the cicatrix was complete.

I have treated many similar cases, arising from simple abscess, the sequel of dental disease. I have always, when the opening was of sufficient size either awaited the natural separation of the sequestrum, or when assured that it was no longer adherent to the second bone, gently withdrawn it. Simple causes may often be productive of extensive injury, as the following case will show:

Case II.—A bailiff, named Broch had a tumor of the palate as large as a pigeon's egg, with swelling of the nose and upper lip, consequent of a decayed condition of the teeth. Pus escaped from the nose and there was a fistulous canal from the second incisor to the first molar of the left side.

As the case seemed an urgent one, I removed the decayed teeth and stumps, thus destroying the fistula. I then excised the the palatine tumors, found the bone carious and the nasal membrane covering it perforated, which accounted for the discharge of pus from the nostril. I first employed dressings of dry lint, emollient and detergent gargles, and after the subsidence of local inflammation, touched the bone with mercurial water twice in eight days. In this time the sequestrum separated, leaving an opening into the nostril about the size of a quill, which was closed by a prolongation of the mucous membrane. I made

use of dressings of dry lint, gently applied, and occasional styptics to suppress exuberant granulations. The entire cure occupied six weeks.

For a great number of similar cases, the reader may consult Jourdain's work.

When local irritants cause or seem to be connected with the disease, they should be promptly and completely removed. The after treatment will be conducted upon general surgical principles.

When a fissure has been permanently formed and its limits ultimately defined, whether it has been congenital or accidental, the indication is to remove the deformity by producing a closure of the fissure, or, if this cannot be done, to supply the deficiency of the parts by such mechanical appliances as may be deemed most suitable.

When the soft palate or some portion of it has been lost, the lesion has been substituted by means of an operation, which has been termed staphyloplasty*

The operation can be successful only when the perforation is small. It consists in detaching a portion of mucous membrane from the surrounding parts, and so adjusting them with reference to the perforation, as to procure a permanent covering of the cavity, when adhesive inflammation has been effected. The operation is difficult, and requires great dexterity in execution as well as ingenuity in contrivance. Dr. Pancoast, in his Operative Surgery, describes an operation of this kind, successfully performed by himself, to close a hole near the centre of the hard palate, which formed a communication between the nose and mouth.

The operation for closing a cleft palate is called staphyloraphy.† It consists in paring away the edges of the fissure and closing them so perfectly as to produce union by adhesion.

The operation has been successfully performed by a great number of surgeons, European and American, and several

*Σταφυλη, the uvula, and πλαδδω, I form.

†Σταφυλη, and Ραφη, a suture.

methods of performing it have been adopted and suggested; each having its advocates.

Dr. S. P. Hullihen, surgeon dentist of Wheeling, Va., of whose surgical skill I have already made mention, had performed this operation successfully eleven times, up to the year 1849. This ingenious surgeon has invented a bistoury for paring the edges of the fissure, which possesses decided advantages over the ordinary double edge knife. It is composed of two parts, which open like scissors, but when closed, form a double edged knife or bistoury. The manner of using it is as follows: after first seizing the cleft edge of the velum, at the base of the uvula, with a pair of curved forceps, and putting it on the stretch, the bistoury with its back towards and against the palate bone, should be pushed through the velum near its edge; then, by opening it, the edges will be pared off in the most even and perfect manner possible.

Further procedure should be suspended until the hemorrhage, although seldom very great, shall have partially subsided. A needle armed with a well waxed ligature, and held in a pair of suitable forceps, should be passed from before backwards, through the most dependent part of the left margin, about three lines from the edge. As soon as it is seen on the opposite side, it should be grasped by the assistant, with a pair of long handled forceps, and as soon as the hold of the port-aiguille is relaxed, drawn through, replaced in the latter, and passed through from behind forwards, the right margin of the velum opposite to the left. After the patient has rested a few minutes, a second, third, or fourth ligature should be introduced.*

Dr. J. C. Warren and his son, Dr. John Mason Warren, have each performed this operation repeatedly, and with great success. In most of these cases the fissure has extended through both soft and hard palate, and in one case through the jaw and lip.

Dr. J. M. Warren's method has been to dissect off the mucous membrane from the hard palate, on either side, and stretch this across the fissure and then unite the edges by sutures.

* Dic. Dental Science.

Although it is generally asserted by surgical writers, that when the fissure of the hard palate exceeds an inch, no union can be expected, Dr. Warren has proved by his success in such cases, that the opinion is erroneous.*

Dieffenbach recommends that a longitudinal incision be made at a short distance from the edges of the fissure, in order to permit the closure to be accomplished in the way before mentioned.

A great variety of instruments has been invented by different surgeons, and recommended to be used in this operation. I have already mentioned the cutting scissors of Dr. Hullihen. A variety of needles and needle-holders has been proposed. Dr. J. C. Warren uses a needle with a movable point. Dr. N. R. Smith prefers a simple lance-shaped instrument, mounted on a handle, and having a slit near its point, which opens at its posterior end. The needle is broader in front of the eye than behind it, which renders the passage of the back part easier. Armed with a ligature, the curved portion of the needle is carried beyond the fissure, and its point introduced behind the middle of the uvula, and as soon as it has come out far enough to expose the ligature in the slit, the ligature is taken hold of with a tenaculum, disengaged from the slit or eye in the needle, and the needle is withdrawn. A second ligature is introduced, half an inch higher up, and, if necessary, a third, at an equal distance from the second. With the ends of the ligature passed through the uvula, this part is drawn forwards, until the fissure in the soft palate shall assume a nearly horizontal position. Its edges are then cut off with scissors or bistoury. The ligatures are then tied, and the ends cut off.

Dr. Hullihen has invented an instrument for passing the needle, which he calls an acutenaculum, and which he thinks better adapted to the purpose than any other. It is composed of a staff and a slide. The staff is a small steel bar, six inches in length, a fourth of an inch in breadth, and an eighth of an inch thick, with an arm at the upper end, rising at a curve from

* Reese's Cooper's Surgical Dictionary.

the staff, and half an inch long. On the external or superior side of this arm a duplicate arm is retained by a steel spring attachment, which brings the two arms in close contact, forming the jaws of the instrument. Between these two arms, and on the duplicature, is a small groove, formed to receive the ligature; and when the ligature is pressed between the jaws of the instrument, they open, and it slides to the point designated for its reception, and immediately below which, the jaws are perforated with a hole for the introduction of the needle.

Two inches from the inferior end of the staff, a pair of rings are affixed, to receive the thumb and index finger, the rings standing parallel with the staff, and sideways to the direction of the arms of the instrument. A slide formed of steel, equal in length, thickness and breadth to the staff, is made to fit the upper surface of the staff, and to move with ease up and down upon guides placed on the same. From the superior end of the slide is a short straight spear-shaped needle, constructed with an eye just back of its point, with a small notch opening to it from the upper surface.

When the ligature has been fitted in its place in the jaws of the instrument, and the slide adjusted to the staff, the slide is forced upwards, the needle and jaws approach each other, and the needle passes through the hole in the latter, just under the ligature, which is caught in the notch of the needle, and as the slide is drawn backwards the eye of the needle is threaded, and the ligature drawn through the velum. This instrument is certainly an ingenious one, and the preference given it by the inventor, who has operated so often and so well, is sufficient commendation.

For a more particular description of this instrument, made intelligible by an accompanying plate, the reader is referred to an excellent article on cleft palate, by Dr. Hullihen, published in vol. v, page 166, of the American Journal of Dental Science. Concise and admirable directions will also be found in that paper, for conducting every step of the operation.

When the loss of parts is so great as to forbid an attempt to close the fissure by an operation, nothing remains to be done

but to cover it by a gold plate or obturator, such as the circumstances of the case will admit. The skilful dentist will often be able to remedy these serious lesions to a very great extent, by well devised and artistically executed substitutes.

For a description of these mechanical means, and the mode of adjusting them, I refer the reader to the works on mechanical dentistry.

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ARTICLE I.

Treatment of Dental Caries, complicated with Affections of the Pulp and Peridental Membrane. By Robert Arthur, D. D. S.

NO. I.

Having, for some years past, directed my attention, with interest, to the subjects which give a title to this paper, I now propose to present to the profession the results of my experience in relation to them, and also what I have gathered in my intercourse with other members of the profession.

The very satisfactory results which, in my own hands, have followed the practice of the operation of the entire extirpation of the dental pulp, and what I know to be the results of this practice in the hands of several of my friends, satisfy me that great good may be accomplished if the general attention of the profession can be seriously directed to this subject. The denunciations of this operation which, from time to time, have appeared in various places, have satisfied me that, when attempted, it could not have been performed in the thorough manner which I know is essential to success. As success has followed the practice which I have adopted, (and which is not by any means original with me, or peculiar to myself,) I have

felt it a duty to state, in full detail, what that practice is, so that it may be fairly and faithfully tried by all who think the objects to be gained worth the trial. If it is fairly and faithfully tried, I cannot see how the results can be different from what I and others have found them to be; and if these are obtained, I am sure any operator who adopts the practice, will be well repaid for his pains.

The general outlines of this practice have already been drawn, both in an editorial article which appeared in vol. vii of the "Journal," by Dr. Westcott, in an account of a visit to Dr. Maynard of this city; and in a series of excellent articles on the subject, by Dr. J. D. White, of Philadelphia, first published in the "Dental News Letter," of that city, and afterwards copied into the "Journal." But, in order that this operation should be attempted with probability of success, by those who have never before practiced it, I am satisfied that more should be told in detail, than what is stated in those articles. This is what I propose to do.

When I first thought of publishing my views upon this subject, it was my intention to confine myself to that branch of it to which I have alluded above. But, on considering the matter more attentively, I found so closely connected with this subject, several others, that I enlarged the original scope of my design, so as to embrace the treatment of the teeth after the pulp may have become in any manner involved, or in danger of being involved, in disease, or in the progress of necessary preservative operations. And as disorders of the peridental membrane so often accompany or are occasioned by treatment of the pulp, some examination of these disorders seemed to come naturally into this place.

It is generally an ungracious thing to make apologies in advance, for conscious imperfections of a work, and it may, perhaps, be said by some, that a writer ought to get rid of imperfections in what he ventures to publish. This, however, can never entirely be. And when a man is satisfied that he is able to say something which may either be useful in itself, or be likely to suggest what may be productive of good, he ought

to say it without delay. I am quite as well aware as any of my readers can ever become, of what will be found imperfect in the following treatise, and I can only hope that they will be stimulated to endeavor to supply all defects which they may discover in it.

As this treatise is intended, for the present at least, for members of the dental profession, who are supposed to be well acquainted with the anatomy of the teeth, I have determined to abandon my original intention of devoting a portion of it to a minute description of the dental pulp, and the cavities in which it is contained, in the various classes of the teeth. If, however, this effort proves to possess any value, and is favorably received, I may, at some future time, add these preliminary descriptions, and also the results of a number of investigations, upon which I am now engaged, in relation to the general subject, which cannot but prove useful, at least to the student of dental surgery, if not to the profession at large.

The preservation of the teeth, after that portion which is now generally designated the pulp, has been deprived of its bony covering, by disease or otherwise, has long been a desideratum, and has, on all hands, been acknowledged an object difficult of accomplishment. Many eminent practitioners of dental surgery, till within a very late period, have declared their belief, that any operation having this end in view, except in a very limited number of cases, would result to the injury of the patient upon whom it is practiced, and have accordingly denounced it in severe terms. A change, however, I am glad to perceive, is gradually taking place in this respect, and saves the necessity of meeting objections which have been urged against it on a variety of grounds—objections which it would be an easy matter to set aside.

Several methods have been employed to accomplish the object alluded to. These shall be briefly examined.

The French practitioners, who have, for many years, given much attention to the subject, advised, generally, the entire extirpation of the pulp, and relied, principally, upon the actual

cautery to effect this object. Many careful descriptions of the instruments for the purpose, and the manner in which they should be employed, are given by them. This operation, with them, however, was confined to the superior incisor and the inferior bicuspid teeth, which, they allege, are the only teeth in which the pulp, in its whole length, can be reached with the caurerizing instrument.

It was directed, after opening the internal cavity, so as to remove all obstruction, to heat the instrument, and thrust it quickly into the pulp, and to repeat this operation as long as any sensibility remained. Several days or weeks were then allowed to elapse, for the dissipation of any inflammation which might ensue, when the tooth was filled in the ordinary manner.

Fauchard, (vol. i, p. 175,) in a chapter on the treatment of painful teeth, describes an operation, which he calls trepanning the teeth. It is simply piercing the pulp with a fine needle, from which the temper has been taken out. After this has been done, for the purpose, he says, of giving egress to the humors which may be retained in the dental cavity, the tooth is to be left untouched for several weeks. The external cavity, he says, is to be filled with cotton, to prevent decay in the meantime, but care must be taken to avoid packing this so tightly as to prevent the escape of any matter which may be discharged from the dental cavity. Indeed, he sometimes found it necessary to remove, several times, the final metallic filling, to relieve pain which followed the operation from this cause. With the incisor and canine teeth, he alleges, he was generally successful in relieving the pain; and he advises that the operation should be confined to these. In cases where pain is not entirely relieved by this operation, he refers it to the peridental membrane, and notices, too, the fact, that pain sometimes continues even after the extraction of such teeth.

It is proposed, by Hunter, to extract teeth after the nerves have become exposed, boil them with a view to render them perfectly clean, and then return them to the sockets; after which, he says, as they are now dead, they cannot suffer any further from disease, but can only be acted upon chemically or me-

chanically. This practice he recommends in grinders only. No comment upon this practice is necessary at the present day. If the patient will not suffer the extraction of a tooth affected in this manner, (an operation to which the author alluded to gives preference,) he must have the nerve burned, and this, in order to be successful, must be done to the apex of the fang, which is not always possible. Any one of the concentrated acids is capable of destroying the soft parts of a tooth, if brought into contact with them. To the lower teeth these substances, he says, may be readily and conveniently applied, as they will pass down into the fang by their own gravity; but, for the same reason, they are not readily applicable to the upper teeth. For this purpose, caustic alkali is recommended, placed upon a dossil of lint, and pushed up into the dental canal.—(Hunter, Am. ed., part ii, pp. 7, 8.)

It has also been recommended to effect the destruction of the pulp, by the partial luxation of the painful tooth. The operation consisted in removing the tooth so far from the socket as to break up its connection with the jaw, and then immediately return it to its place.

The whole of the above class of agents have reference to the entire destruction of the dental pulp after it may have become exposed. The authorities for these methods of practice might be very much increased; but as they have deservedly gone almost, if not entirely, out of use, it is, of course, unnecessary.

Mr. Thomas Bell, (p. 151,) after noticing several of the methods of destroying the nerve mentioned above, with, it seems to me, unanswerable objections, deprecates the practice as painful and inefficient for the intended purpose. He does not place reliance upon any operation for the preservation of a tooth after the pulp has once become extensively exposed, but believes that all attempts of this kind will result to the injury of the patient. When, however, the pulp is very slightly exposed, he advises the use of agents which will remove its sensibility, or produce its absorption, "so as to render it capable of receiving the stopping without any pain or inconvenience." For this purpose, he made use of alcohol, spirits of camphor, solu-

tion of nitrate of silver, &c., kept continually, for some time, in contact with the slightly exposed pulp. "It is," he says, "not easily determined, nor is it of much importance, in what way these applications produce the effect—whether by occasioning the actual absorption of that part of the membrane to which they are applied, or by gradually wearing out, as it were, its sensibility; it is sufficient, that experience proves them to be efficacious. I have generally preferred camphorated spirits or alcohol, as the nitrate of silver requires more caution in its management, and could not, perhaps, with safety, be left to the patient's own care. The liquid should be applied at least three or four times in the day, on a small bit of lint or cotton, the cavity being rendered perfectly dry, and its use should be continued until considerable pressure no longer occasions pain."—Op. cit. 154.

Koecker, (Am. ed., p. 226,) in taking up this subject, after having denounced the practice of destroying the nerves of teeth in the manner commonly adopted at the time he wrote, asserts that the only rational manner in which a tooth can be treated after the exposure of the pulp, is the restoration to, and preservation of the health of this important part of the tooth. For this purpose, he adopted local treatment, to obtain the following results:

"1. To put a stop to the caries, and consequently to prevent the irritation upon the lining membrane of the tooth.

"2. To suppress the hemorrhage, and to cure the membrane if wounded.

"3. To protect the membrane, artificially, against the action of all foreign agents."

If the cavity of decay could be properly prepared without wounding the pulp, Dr. Koecker at once filled the cavity in the usual manner. But if the pulp was wounded, he arrested the hemorrhage by the actual cautery, which he applied by means of an iron wire, filed and bent, so as to adapt it perfectly to the form of the part of the pulp exposed; this he applied repeatedly to the part, taking care to avoid touching the adjacent bone. After having done this, he wiped out the

cavity—observing great caution not again to wound the pulp: allowed sufficient time to elapse for the original wound of the pulp to heal, when he proceeded to effect the third object proposed by him, the protection of this portion of the tooth against foreign agents. This he accomplished by laying over the exposed pulp a piece of thin leaf lead, and then filling up the cavity with gold, in the usual manner. After the completion of the operaton, Dr. K. advises the patient to avoid any causes which will be likely to excite inflammation in the surrounding parts, and takes the proper means of subduing it on its first appearance. Dr. K. asserts that five out of six teeth may be preserved alive by this treatment, and mentions a case in which he succeeded perfectly with six, viz. one upper incisor, one cuspid, two bicuspids, one under bicuspid, and one molar.

I believe I have now presented the substance at least of what is on record, which has any bearing upon the treatment of the dental pulp, previously to the introduction of the arsenious acid as an agent for the purpose of effecting the entire destruction of this portion of the tooth.

It will be seen that little was done, so far at least as we may judge from what is on record, towards the performance of a thorough operation for the removal of the dental pulp, and the subsequent treatment of the tooth. The French writers recommended the removal of the pulp, either with an instrument, without any preparatory steps, or to destroy the sensibility, previously to doing this, by the actual cautery. Much was said about the manner of applying the cautery, but beyond this, the directions given for the subsequent treatment of the tooth, are very meagre indeed.

English writers generally condemned the operation, as will have been seen, and preferred making an effort to save the pulp alive.

The operation now practiced in this country, for the treatment of the teeth, after the pulp may have become uncovered, is entirely to remove this part of the tooth, as far up into the root as it can be reached by means of a delicate instrument, and after this is effectually done, to fill the place occupied by the pulp, up to the apex of the root, with gold.

It is difficult now to say, with certainty, who deserves the credit of having originated this operation. Dr. E. Baker has made, as far as I am aware, the first publication in relation to the subject,* and after describing briefly the operation, states that the late Dr. Hudson, of Philadelphia, was in the habit, thirty years before that time, (1839,) of treating the front teeth in this manner, and with great success.

The operation for the entire extirpation of the pulp, and the complete filling of the fang, divides itself into two classes—that which confines it to the incisor and bicuspid teeth, and that which embraces all classes of the teeth. From evidence presented, it appears that the French practitioners, many years ago, were in the habit of removing the body of the pulp; but nothing has been left on record which will justify the belief that they attempted to practice the thorough operation of filling the fangs. Dr. Maynard, who appears to have taken great pains during a late visit to Europe, to ascertain the exact condition of dental surgery there, states that he did not meet with a single individual, in England or on the continent, who had practiced the operation, and that he introduced it into St. Petersburg.

Dr. Baker, in the article above alluded to, states that the late Dr. Hudson, of Philadelphia, was in the habit of removing the pulp from the canal in the roots of the teeth, and filling carefully with gold; but he does not say this operation was performed upon the molar teeth. For a long time, whilst it has been admitted by some of the most decided opponents of the practice, that the operation might be allowable when confined to the incisor teeth, it was objected to, without qualification when practiced upon the molar teeth. Now the operation, as applied to the molar teeth, I consider the most important feature of the treatment, for these teeth are really, in many cases more valuable to the patient than the incisor teeth, which can be more easily replaced when lost.

I have carefully inquired into the origin of this operation upon the molar teeth. My attention was first called to it by Dr.

* See Am. Jour. Dental Science, vol. i, p. 171.

J. D. White, of Philadelphia, who stated to me, it is now my impression, that he practiced it about ten years ago. Dr. E. Townsend, of Philadelphia, (see Journal for October, 1850,) states that he began to practice the operation in 1840, and has since performed it in many cases, but does not state whether he confined his operations to the incisor teeth, or practiced it without regard to the class. The first publication on the subject of performing this operation upon the molar teeth, as far as I am aware, was made by Dr. Dunning, in a paper on "Practical Dentistry," read before the sixth annual meeting of the American Society of Dental Surgeons, and published in the Journal of 1845. Dr. D., in this paper, objects to the use of arsenic for destroying the vitality of the pulp, and advises its removal with an instrument, without any preparatory treatment. After practicing it, more or less imperfectly, for several years, I took up my residence in Washington City. Dr. Maynard then described to me his most thorough manner of operating in these cases, and I adopted improvements he suggested, with great advantage. In conversation with him, he says he filled a molar tooth in this manner, as nearly as he can recollect, about thirteen years ago. He states, however, that the operation is not original with him; that it was first suggested to him by Dr. Cherry, of Alexandria, and that it is his impression that the Drs. Tucker, of Boston, practiced it long before he did. Of one thing, however, from a variety of evidence, convincing to me, I am satisfied that he was among the first, if not the first, who performed this delicate operation in the thorough manner in which it is now generally done to insure success. And I am satisfied that the present credit the operation has obtained in the profession, is, in a great measure, due to him.

Up to the year 1836, as far as I can learn, the operation of destroying and removing the dental pulp, was limited, in this country, to the incisor teeth, and was practiced by a few individuals only. At that time, the arsenious acid, as an agent for the destruction of the vitality of the pulp, previously to its removal, was introduced to the profession by Dr. S. Spooner, in a popular treatise, entitled "A Guide to Sound Teeth."

The use of this agent removed one of the most serious objections to the operation—its extreme painfulness. The surprising effects, and the uniform certainty with which they followed the application of this substance, induced, at once, its almost universal employment for the purpose of destroying the vitality of the pulp. It now became a common practice, not only to destroy the pulp of the front teeth, but of all the teeth. When a patient presented himself, to have a painful tooth removed, he was told that he could be certainly relieved of pain, without the loss of the tooth, which, probably of great value to him, could be saved and rendered useful. The tortured patient, glad to escape the terrible operation of extraction, readily consented. The arsenic was applied. If the pain did not immediately cease, in the course of a few hours at least he would be relieved. The next day, on coming to his dentist, he finds, to his great amazement, that the tooth, which the day before was so exceedingly sensitive that the mere contact of the air rendered him almost frantic, is now perfectly insensible. He can scarcely believe the evidence of his senses. The tooth is at once filled, and he leaves the office, loading his benefactor with thanks, and paying the fee for the operation, with expressions of gratitude. The operator was delighted that he could, with so much certainty and ease, accomplish such an important object.

It may be readily supposed that results such as these, brought it at once into general use. With the better class of practitioners, however, it was soon discarded, for, although the first effects were so satisfactory, it was soon found that bad consequences followed, which, with almost invariable certainty, made the extraction of the tooth, so treated, at last necessary. In the course of a few days, or sometimes weeks, inflammation of the peridental membrane set in; the whilom comfortable and useful tooth became at first tender to pressure, and apparently a little longer than its neighbors; in a few days more, came an attack of pain more serious than that which a few weeks before was so successfully relieved; the gum near the tooth enlarges, the pain becomes intense. The sufferer either goes at once and has the offending member extracted, or poultices his face

o hasten suppuration. After suffering excruciating pain for a ime longer, relief came in the shape of an alveolar abscess; an ılcer is formed, and a continuous unpleasant discharge is es- ablished. In some cases, in the lower jaw, a fistulous open- ng is formed in the cheek, and when the cause of all this is inally removed, an unsightly scar is left to disfigure the face or life.

That these were the common results which followed the use of arsenic after its first introduction, is well known, and it is ıot at all surprising that its use should have been discouraged. n my own case, after using arsenic in this manner for a short ime, I threw it aside as injurious.

After a time, however when the use of arsenic for the extir- ɔation of the pulp was generally discontinued amongst the ɔetter class of practitioners, it was understood that several nembers of the profession, some of high repute, were using it ıabitually, applying it to any class of the teeth, and with ılleged success. This brought forth a number of violent attacks ıpon the practice, and it was denounced as the worst kind of nalpractice. No defence of the practice was made, rather rom indifference to the attack—a feeling that it was uncour- eous—and from a desire, on my own part at least, to let the natter take its own course, till time enough had elapsed to enable me, if no one else would do so, to present the practice n such a light that it would command the attention at least of he profession. But I now find myself forestalled, by a change which appears lately to have taken place in the views of some, who, a few years since, most loudly denounced its use, and who are now disposed, as they should have been long ago, to ɔelieve that there was some truth in the positive declarations of practitioners, whose character as men gave them at least a claim to credibility.

But if arsenic is made use of as the destructive agent in this ɔperation, and it has been used improperly heretofore, what is he right manner of using it?

This has already been indicated, as I have said, in an article n the 7th volume of the "Journal," and in a series of excellent

articles on the "Treatment of the Dental Pulp," by Dr. White of Philadelphia. What I propose to do now, is to present a description of the operation, in full detail; the symptoms in the course of treatment which have presented themselves in my hands; the causes of failure, and the cases in which success may be reasonably looked for.

The apparent want of a work specially devoted to this subject, at this time, has induced me to undertake the task. Although the treatment I shall advocate is not yet all that could be desired—still I am convinced, and hope I shall be able to convince others, who are incredulous now, that the subject is one of considerable importance to the community, and to the profession at large.

If a work devoted to this special subject could have been expected from others in the profession, I should most willingly have left it to abler hands. As I have undertaken the task, it shall be my effort to present the subject in a plain, straight-forward way. I shall endeavor to say that which may prove useful, and that only. I shall endeavor carefully to give credit to others, for what they may have done towards the improvement of this valuable practice; and if I should fail, in any instance, to do so, this will arise rather from a want of knowledge of facts, than from intentional neglect.

[To be continued.]

ARTICLE II.

Cheap Artificial Teeth, and Cheap Dental Operations in England.

Whether or not we are disposed to agree with the sweeping dictum of Napoleon, that England is a nation of shopkeepers, we cannot but confess that there is no other country in the world, in which so much respect is paid to wealth, independent of rank, character or worth; or in which money so completely monopolizes every other consideration. The ques-

tion generally is, not, is Mr. So-and-so a man of intellect, respectability or character? not, is he a worthy man? It usually is, does he give *noble spreads*? what is he worth?

It arises, in a great measure, from that over-respect for wealth—the *aura sacra fames*, and its concomitants—that no man sets himself down in a respectable neighborhood, with a decent establishment of servants, and displaying some kind of equipage, without exciting the curiosity and fixing the attention of his neighbors—who, however, at once arrive at the conclusion, from the dashing and gaudy livery of the footmen, the thoroughbred bays, and the unexceptionable color of his chariot or his Brougham, that he is a visitable person; probably a brass plate on the door gives the pleasing intelligence that he rejoices in the name of either a Dobbs, Snooks or Saunders, or some other equally money-speaking patronymic, leaving the world in a pleasing uncertainty whether the numerous calls at his door are made by *mere* visitors, (in which case he must have a most extensive list of acquaintances,) or by others, who come for some more useful purpose than to kill half an hour in dissecting the characters of their neighbors, in settling how many peonies the iron duke carries in the left tail of his taglioni or paletot, or whether Miss Mullens, who lately ran away with her father's butler, was fifteen, or had arrived at the more mature age of forty, and had dyed her hair and wore false teeth.

Well, calls are made and returned—cards dropped and redropped—according to the usual etiquette made and provided for in these cases; each party exclaiming to their friends, oh! they are such very nice people, and so very agreeable. All goes on well and smoothly, till Dobbs, desirous of pushing his *trade*, and extending his professional connection, throws out a broad hint that he is a dentist.

The sudden explosion of a thirty-two pounder could not produce more startling effects—the news in the neighborhood travels rail road speed—one by one of poor Dobbs' pseudo-acquaintances gradually fall off—the ardent recognitions are exchanged for the cool good morning and the shoulder; before the unfortunate Dobbs has operated on a dozen grinders, he has

had the cold shoulder or the cut direct from half the visiting, tea-and-turn-out portion of the neighborhood.

The junior barrister, (of twenty-five years standing, and a gentleman by act of parliament,) over the way, who lives on his wife's annuity, is obliged to allowance his family, and contracts with his tailor to be supplied with three coats, waistcoats and *continuations*, at the rate of sixteen pounds per annum—the old ones to be returned (minus the nap)—asserts his dignity.

The neighbors of equal pretensions follow his example—coolly observing, that after all, Dobbs is only a *surgeon*-dentist, and consequently not visitable. In this case, the inhabitants of —— street and its vicinity, (for it is usual to say in post octavo circulars,) feel that they have been imposed upon—that after all, Mr. Dobbs is not either a pleasant or a rich man, and that his gaudily dressed footman, and yellow chariot, and sumptuous dinner parties, are only so many fashionable traps to catch and pigeon patients.

So completely is this the case, that it was once observed by a fashionable dental practitioner—one who, by aping the most outré fastidiousness and dandyism; had managed for a time to make himself a kind of dental lion, and obtained more patients from the curiosity of the public than his own talents—that he never met a dentist, even of the first order, in the higher classes of society, or among the nobility *he visited.* It is possible, was the reply, that you are not exactly in your legitimate sphere in those places, and that the countenances of your noble hosts would be somewhat clouded by any allusion to *your trade*—nay, that you are rather endured on sufferance, than as an equal.

That the professors of the dental art are under a sort of odium, there is no doubt, or why is it that men, the highest of the class, who, by education, manners, character and attainments, are fitted for any society, all are, generally speaking, placed in the same category with the others, and considered only as dentists.

A clergyman, a lawyer and a physician have, by right of

their professions, the entrée to good society, whilst the *profession* of the dentist forms rather a reason for his exclusion.

From what does this arise? Simply from this, that the dentist, (of course I speak of those educated to the profession, and dentists properly so called,) have not been true to themselves—have not unanimously asserted their dignity, but, by trusting so much to their individual respectability and talents—to the idea that their high qualifications will exempt them from a general rule, have become mixed up in the opinion of the public, with the host of the cheap advertising fraternity, who at the same time fleece their patients and disgrace the profession.

They do not appear to have read, or if they have, pay little attention to, the fable of the old man's sons and the bundle of sticks, and some others, the morals of which would point out the dangerous ground on which they stand.

It is a well known fact, that the professors of the dental art in England, form the most incongruous amalgamation of anomalies it is possible to imagine—here a ci-devant Jew clothesman, there a blacksmith in one street, and a retailer of bird's-eye and ladies' twist in another; a police dentist in one locality rivals a butcher dentist in another; even the church has furnished its contributions to the art; but "the line would stretch out to the crack of doom." Now all this would be very well, were these gentlemen to prepare themselves for their professional duties, by a proper scientific and artistic training; but, unfortunately, they seem to think that the dental art is to be acquired by mere volition, or, at the utmost, that it may be learned in a few months, or even as many days, from gentlemen who advertise to transmogrify *any* body into a full-blown dentist, in an infinitely small space of time, and compress the knowledge of five years into so many days. Some do not trouble themselves even to go through this process, but having either formed an acquaintance with some superannuated dental mechanic, and fleeced him of a little knowledge, or having been a door-porter to some dental practitioner—suddenly become accomplished dentists—their accomplishments consisting in being able to abstract a tooth some how, and plaster in a little cement *any*

how. Having thus fully *qualified* themselves, they commence the advertising system, and the papers, day after day, teem with their extraordinary powers and *infra*-ordinary charges—is foisted upon the unfortunate and very gullible public. The Jew-dentists offer to plaster up the carious grinders of their patrons, and make them better-ash-than-new, for two shillings each. The Christians out-doing even their Israelite brethren in rhodomontade and hyperbole and cheatery—fleecing the public till the name of dentist becomes identified with dishonesty and infamy.

It has been calculated that some of these advertisers insert four thousand notices in the course of twelve months, which, supposing each advertisement to cost five shillings, amounts to the enormous sum of £1000, and on this they anticipate, and frequently obtain, a profit of £1000 more, or, in other words, shent-per-shent on their outlay. The system must be kept up, there must be no hanging-fire, otherwise the capital originally invested will be lost. As a matter of course, these gentlemen never expect to, or are desirous of seeing their dupes a second time, taking especial care to fleece them effectually at the first. The patients have no wish for a repetition of the visit—while those patients who are not desirous of defending an action at law, on account of the absurd obloquy that is usually attached to these cases, pay the demand, however exorbitant, and think themselves extremely fortunate to have escaped from their infamous clutches.

It occasionally, however, occurs that these gentry catch a tartar, and have to make their appearance before the police magistrate. This process is the finale, and a change of name and abode becomes requisite. From Blackfriars Road, Dobbs, Snooks or a Saunders is soon transmogrified into Monsieur This, or Herr Van That, and commence again their extortions, as wholesale pseudo dental mongers.

In my next paper I shall endeavor to picture a few of the striking scenes, tricks and impositions of these worthy disciples of Scyron.

R.

ARTICLE III.

A New Kind of Artificial Palate: with Observations on the Changes that take place in the Velum and Pharynx, during Deglutition, Respiration and Articulation. By DR. S. P. HULLIHEN, of Wheeling, Va.

ARTIFICIAL teeth, legs and eyes, are the only portions of the human body that are usually supplied with any degree of ornament or usefulness; and the beauty and usefulness of these depend upon the *amount* of motion that is capable of being imparted to the movement of the artificial parts. Hence, artificial teeth stand preeminent: the motion of the jaws being in no way impaired in the loss of the natural teeth. Artificial ones can, therefore, be endowed with almost the same beauty and usefulness with which natural ones are. The usefulness of the artificial leg is, more or less, depending entirely upon the amount of muscular power or motion that may be imparted to it, from the remnant of limb on which it is attached. The natural appearance of the artificial eye depends as much upon the motion that is given to it, as upon either its size or color. Without procuring motion, therefore, from the neighboring parts, or rather from the muscles concerned in *some* of the movements of the lost parts, artificial substitutes will be devoid of either usefulness or ornament. It is upon this principle, that the artificial palate, shortly to be described, was planned.

Before entering, however, upon the description of this kind of palate, it may not be amiss, first, to refer to some actual observations made upon the movements which occur in the velum or soft palate and pharynx, during the performance of deglutition, respiration and articulation—for the purpose of learning, if possible, how far the offices of the velum may be supplied by mechanical means.

In the year 1837, Dr. Hilton, of England, removed a large bony tumor from the face of a patient, aged about thirty-six years. The chasm left by this operation "was bounded *below*

by the nasal surface of the hard palate and the floor of the left antrum; *above*, by the left frontal sinus and left half of the cribriform plate of the ethmoid bone; *internally*, by the septum nasi, which presented a general concave surface, with a small opening through it at the lower part, communicating with the left nostril; and *externally*, by the left orbit; *posteriorly*, it opened into the pharynx,"—exposing to perfect view the following very interesting physiological facts.

"*Respiration.*—During quiet and unconstrained breathing, *with the lips closed*, so that the air must pass through the nose and opening, there is not any perceptible movement upwards of the soft palate; nor does the pharynx advance. The latter remains perfectly still; and the former, we may conclude, as it disappears in the descending direction, is closely adapted to the back part of the mouth, so as to leave, for the air passing to and from the larynx, a free and spacious canal.

"When *the lips are slightly separated*, so that the respiration is in part carried on through the mouth, the soft palate is seen to be carried, or rather, perhaps, drawn, upwards and backwards, at each inspiration, and at each expiration again to decline; the pharynx continuing almost at rest, but having a slight disposition to advance.

"Upon taking a full inspiration through the mouth, the palate is directed more completely upwards and backwards, and adapts itself to the advancing pharynx. This adaptation remains until the expiration has nearly terminated; but it should be remarked that the sides of the pharynx do not, even in this case, approximate so much as during deglutition.

"In smelling, there is no perceptible movement of the palate nor of the walls of the pharynx.

"In holding the breath, as it is termed, or forcibly retaining the air in the chest, either with the lips closed and the tongue depressed, or with the tongue raised and adapted to the concave surface of the hard palate, and the lips separated—or, lastly, with the superior and posterior portion of the tongue applied, by great voluntary effort, to the concave commencement of the soft palate, the lower jaw being depressed, and carrying

with it the genial portions of the genio-hyo-glossi muscles—the pharynx advances, and the palate is much raised, presenting a convex surface upwards, undulating, with a somewhat tremulous motion, upon the subjacent column of air."

Mr. Hilton observes, that "the closure of the glottis alone, can retain the air within the chest but for a very short time, and that the assistance of the soft palate, as well as of the tongue and lips and jaws, is highly useful."

"Sneezing consists of inspiration through the mouth when the palate is raised, and of expiration through the nose when the palate is depressed. But if sneezing happens many times in quick succession, so that the palate has scarcely time, after its elevation during the oral inspiration, to descend to the back of the mouth, before the air returns from the chest, the palate is then seen violently agitated by the air in its ascending direction, being at that time obliquely placed with respect to the expired air, so that a portion of the air passes through the nose, and a portion through the mouth, giving the coarse, tearing sensation to the palate, and flapping motion of the lips, expeperienced in the imperfect attempt to sneeze."

"*Deglutition.*—When the mouth is open to receive the food, the palate is raised, but not so completely as in full oral inspiration; the sides of the pharynx also approximate, but not so closely as on drawing the breath inwards; the posterior part of the pharynx advances but slightly. Directly the food, either solid or fluid, is placed in the mouth, the palate descends, and continues, during the detention of the food, closely adjusted to the back part of the mouth, the pharynx remaining perfectly quiet. These conditions are to be observed during the process of mastication, performed with or without food in the mouth. Extreme lateral movements of the jaw encroach upon the pharynx but slightly; and in the ordinary lateral motion there is no difference to be observed in its capacity. Immediately antecedent to that part of the process of deglutition occurring in the passage of the food between the fauces and pharynx, or when the food is passing backwards over the upper opening of the larynx, the palate is carried *completely* upwards and backwards, and

the pharynx advances, the sides of which, more especially, approximate. At this time the thyroid cartilage rises. These movements of the larynx and palate occur nearly simultaneously, those of the palate having but a momentary precedence. The palate and pharynx being now nicely adjusted, their common surface presents, from above, a hollow cone, in consequence of the partial descent of the palate; but so closely is their adaptation maintained during the deglutition, that not the slightest portion of the passing substance is perceived above the palate. At this moment the pharynx is indeed divided into two distinct cavities—one at the upper part, common to the nose and pharynx—the other open to all the apertures below the palate. As the fluid or food passes into the lower part of the pharynx, the upper portion recedes or retires from the palate, the soft palate falls, and last in this succession of events, the larynx, as is indicated by the motion of the thyroid cartilage, descends." By these observations, we learn that the velum has many of the characteristics of a valve.

"*Articulation.*"—On this head, Dr. Hilton's observations were unsatisfactory; indeed, it could not be otherwise—the eccentric movements of the soft palate—the difference in its movements in uttering the same words in different tones of voice—the frequent sameness of its position during the delivery of entire sentences, and its wild tumult in others, render a description of its movements during articulation beyond the power of description. Upon this point I speak with some experience, having had a case, about a year since in which the movements of the palate were clearly visible during articulation, yet I was unable to make any observations that were in any degree perfect or worthy of record. But, however interesting such facts would be in a physiological point of view, to know every change that takes place in the soft palate during articulation, would be of no practical importance in the construction of an artificial one. The beautiful and perfect mechanism of the velum and pharynx, described by Dr. Hilton—their uniform and associated movements during respiration and deglutition, shadow forth, most clearly, that an artificial substitute, so contrived as to

fulfil, so far as possible, the indications of a velum, and so arranged in the mouth that it would receive muscular motion from whatever remnants may remain of the destroyed velum, would accomplish all that art could do, even were it possible to be in possession of every *quiver* of the velum, that may take place in giving utterance to every word in every living language. I say, "from whatever remnants may remain of the destroyed velum," for no one, I presume, having the least claim as a dental surgeon, would be inconsiderate enough to attempt the application of an artificial substitute in the case of a cleft velum or soft palate, with any hope of success. In such cases staphyloraphy is the only resource, and no one, I will venture to predict, will scarcely ever see a case, where the velum has been destroyed by disease, in which there will not be remnants enough, with muscular power enough, to work an artificial substitute with more or less benefit to the patient, if properly applied.

There is a great difference, however, attending the success of improving the voice, in patients where the velum has been lost by disease, and where the palates are cleft. Patients who have once acquired a correct enunciation, and lost those parts by disease, note with horror the change that takes place in their voices, and experience difficulties that are grievous to be borne, in their articulation, and these defects are always present in their minds. In such cases, an artificial substitute, having in view the restoration of the air-passages to their normal condition, will at once improve the voice and delight the patient. On the other hand, patients having cleft palates do not *hear*, or rather they do not note, the defects in their own voices; they likewise have acquired a natural habit of speech, peculiar to that class of patients, and any change made in the deficient parts, they almost feel to be an impediment, rather than a benefit. In fact, they do not know how to make a correct articulate sound, and, indeed, they can scarcely ever be taught to do so, even when their palates have been perfectly restored, unless that restoration is effected at an early period of life. Therefore, defects of the voice, attending cleft palates, may be

sometimes remedied by surgical means—but by mechani means—never.

But it is not my intention at this time, to treat of the us and abuses of artificial palates, nor to give anything like a h tory of all the modifications that may be required in differe cases. I only propose to describe *a kind of valve*, which m be attached to any plate, of any desired size or shape—a val that may be set while in the patient's mouth, in an instant, as to admit, through the nares, just the volume of air desired and one that may have many movements of the velum, bei impelled by whatever remnants of muscles may remain of th organ.

An artificial palate made upon this plan, will be compos of four parts: 1st. A valve, made from gold plate, as thin it can well be worked; 2d. A spiral spring, about an in long, and of the size usually made for whole sets of teeth; 3 A slider, one inch and a half in length, and of the width a thickness of a common watch-spring; 4th. A plate, larger smaller, as the case may require, struck up in the usual wa to fit the roof of the mouth.

The size and form of the valve is obtained by taking an im pression of the posterior opening of the nares: the plate com posing it should be struck up in two parts, front and back which, when soldered together, makes a hollow body, of th form in Fig. 1, letter *a*. At the upper end of the valve, small pin is soldered, the point of which looks downward and of sufficient thickness to fit very tightly in one end of th spiral spring. The spiral spring must be made of such length as will permit the valve to rest slightly upon the uppe surface of the remnants of the lost velum. The slider has pin in the posterior end, looking upward to receive the othe end of the spiral spring before described. The anterior end o the slider has a small button looking downward; the slider i attached to the plate by two small staples, as represented i Fig. 2, *b b*. The plate may be made to cover the entire roo of the mouth when necessary; or it may be made only suffi ciently large to permit the mounting of the slider. These dif

erent parts, when put together, particularly if the plate is to over the whole roof of the mouth, makes a palate of the form epresented by Fig. 1.

FIG. 1.

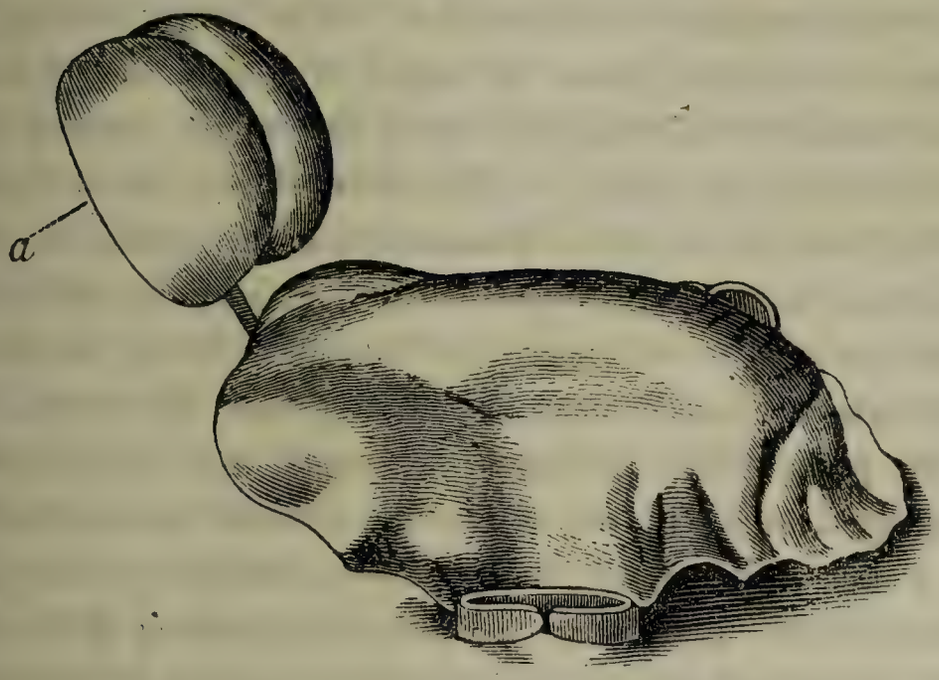
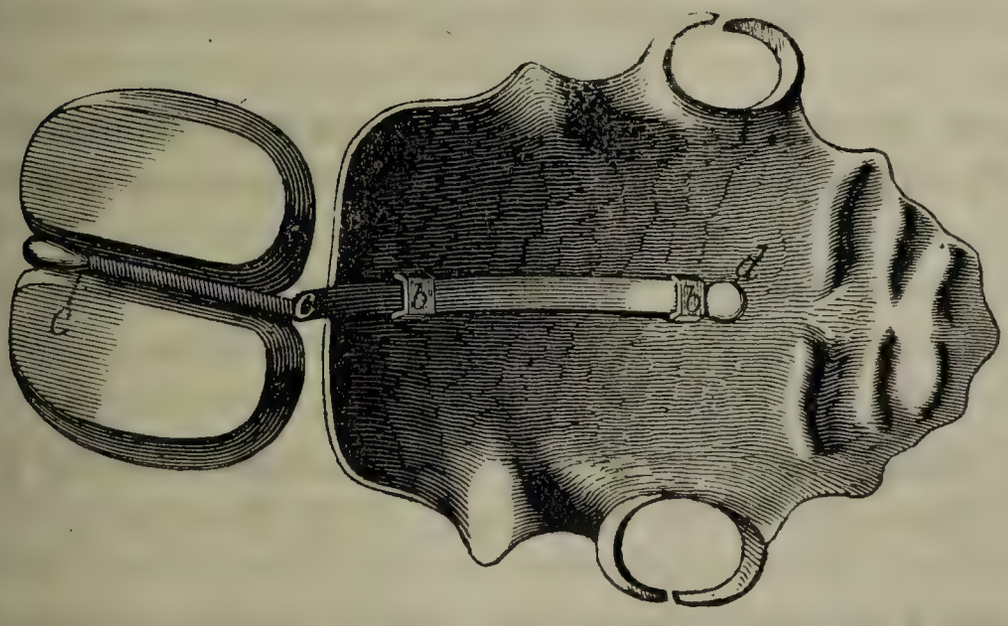


Fig. 2, shows the attachment of the spiral spring to the valve and slider, *c c*. The staples confine the slider to the plate, *b b*—and the button on the end of the slider, *d*, by which the valve may be set back or forward, as desired by the patient, without removing the palate from the mouth.

FIG. 2.



The palate should be made to fit the several parts for which it is intended, with great exactness. The plate must fit the

roof of the mouth, and the teeth to which it may be secured, in a faultless manner. The slider must be arranged so as to permit the valve to be drawn so closely against the posterior opening of the nares, as to close them; or to be pushed back so as to leave them entirely unobstructed. The spiral spring, as I have before remarked, must be made of such a length as will allow the valve to rest slightly upon the upper surface of the remnants of the lost velum. The valve should be sufficiently wide at its base, to overlap the remnants of the velum, so far as the parts on each side will permit, without producing irritation—any other part of the valve than the base, should not be allowed to touch, unless when brought forward against the nares. Unless all the parts are so arranged, the palate will not be properly constructed, and will not of course, answer the end desired.

Thus it will be perceived, that the peculiarities of this palate, are—First, a valve made to fit the posterior opening of the nares. Secondly, the attachment of this valve to a slider, by which the patient is enabled to adjust the valve while in the mouth, in such a way as to admit through the nares, just the quantity of air desired. Thirdly, the mounting of the valve on a spiral spring, which will permit it to vibrate backward and forward, as the breath is inhaled or exhaled; and also to be moved by any muscular action that may remain in the remnants of the lost velum, thereby answering, to a great extent, the purposes of a velum.

Prof. C. O. Cone, in his very able "Report on Practical Dentistry" for 1848, refers briefly to the palate I have just described.

ARTICLE IV.

Daily Jottings in the Gold Book of a Dentist—January 1, *to March* 1. By E. Townsend, D. D. S.—No. 1.

To-day I have had three cases worth a passing notice, and from two of them some reflections may be suggested which would perhaps modify very much, if not improve the practice

of many of those who undertake the treatment of teeth without sufficient regard to their pathological condition, and their anatomical structure. I will briefly state these cases, and explain the mode of treatment which I have commenced, and in which, if I am successful to the end, I hope to produce a state of such comparative health to the organs as to make them useful for many years. The first is a front incisor, which the patient, a lady, applied to a dentist, and one in high repute too, to have filled; finding it somewhat tender, and probably supposing the membrane exposed, he used the actual cautery, to such an extent as to penetrate to the membrane, and then immediately filled the tooth. The lady complained of great soreness of the tooth and surrounding teeth, and in a few days a change of color was very apparent, still, hoping it was a temporary difficulty which would soon subside, delayed asking advice till I saw her, when the pain had become almost unendurable. I immediately removed the filling, which indeed was not difficult, and a gush of pus from the orifice showed but too plainly the irritation which had been caused by this injudicious operation. Relief from pain was the immediate consequence of this liberation of pus, I shall see her every day, washing out the fang at each visit and directing it to be kept free from any extraneous matter.

Case No. 2, was one in which the operator had filled a front incisor over the exposed pulp, which, though the orifice was so small as to be scarcely visible, and had to be enlarged for the free entrance of a small probe, was still sufficient to destroy the vital connection between the internal circulation and the bone, and the death of the tooth and inflammation of the periosteum was the inevitable result. The dentist, in this case, was consulted repeatedly, and attempted to alleviate, by lancing freely, and even by actual cautery of the gum—without, perhaps, ever thinking that he had dammed up the whole cause of trouble within the fang, and as long as that reservoir remained, the external opening was as necessary, and as impossible to heal, as it would be to heal healthily the skin of any part of the body over an ichorous and suppurating surface.

I removed the filling, which was compact and firm, and found

the fang filled with bloody serum; injected with warm water, and directed it to be kept free and clean; shall fill the fang to the apex, when it becomes entirely healthy.

Case No. 3.—A large inferior molaris, right side, had been filled, several years since, with amalgam, as the dentist assured the lady *he* could not fill it with any thing else. Some time after, inflammation and pain set in, and another dentist was consulted, who said it was the poisonous nature of the vile compound with which it was filled, which had caused all the trouble, and proposed, when the inflammation should subside, to extract the tooth, as the only means of CURE.

When the attack had passed off, the lady again called on him, but was unwilling to submit to the loss of the offending member, and nothing was done, as he said the tooth could not be refilled if the poisonous material *were* removed, which it would be very difficult to do. A few months after, the lingual portion of the tooth broke away, and the amalgam fell out; and in this state she called for my advice, expecting to have it extracted. After close scrutiny, I resolved to attempt to save it, and upon passing a probe down both the fangs, found there was still some vitality in them; although there had been inflammation, there had been no abscess, and therefore there was probably still sufficient recuperative power in the surrounding parts and anastomosing radial vessels, to secure a favorable result. I introduced a pledget of cotton, saturated with chloride of zinc, and to-morrow shall hope to find that the portions of sensitive membrane remaining will come away with a clean slough. This tooth is somewhat discolored through the entire dentine, by the mercury and silver, and the patient supposed, for so it was represented to her, all the trouble she had, and all the inflammation, was in consequence of the deleterious nature of the compound with which the tooth was filled—when the very person who so inveighed against it, knew perfectly well, that any other stopping, equally impervious, would have produced the same effect—that even a pledget of cotton, if pressed firmly into the cavity of a tooth predisposed to periodentitis, will produce pain of a violent character. Why not

make their objections to *any* inferior stoppings for teeth, on the true ground. When will the men in our profession, to whom we *should* look for instruction and example, be true—true to themselves, to their profession, to all their brethren *in* the profession, whether high or low, if he have one talent to answer for or five? When will they learn, that to condemn a practice which they would reprobate, they must take care they have truth and fairness on their side, else they may put a whip into the hand of their brother, to scourge their own back. In this very warfare about amalgam, we have had it said, there was great tumefaction of the gums, an ichorous discharge from them, and confined to the teeth in which the filling had been placed, leading directly to the inference, that the mercury had produced all this effect. Now, if ptyalism were induced by the mercury of the compound, its effect would be infused through the whole system, and its action on the gums would be sympathetic and general, not confined to one or two or three teeth, but would affect the whole mucous membrane. Those who have made use of such arguments as these, seem to have forgotten, that if they attempted to prove too much, and the advocates for its use conclusively show these effects produced by other means—then, if their premises were false in *this*, why not in the whole matter; and so by gratifying their love of vituperation, for in some cases it seems to have been more from this feeling than an honest interest in the general good, they have lost their labor and missed their aim. There *are* true, and honest, and conscientious, and moral grounds enough upon which to condemn the use of all *inferior* materials for filling teeth. Take amalgam of mercury and silver as an instance of this; it is always to some extent, often to a very considerable one, oxydizable in the acids of the mouth; it is not impermeable; caries often goes on under it; it is black, and almost always gives a black or blue tinge to the teeth in which it is placed. Here are reasons enough to condemn it, and we do not need to look for any more; yet there is a higher and better ground, upon which, perhaps, most will agree. Do not all who resort, even occasionally, to inferior materials for filling teeth, lose their ar-

tistic feeling in the matter? feel less and less, as they indulge in it, that they are honorably laboring for a high end, do they not in time come to consider the *fee* to be *the* thing of importance to be secured, and the salvation of the teeth, and the permanence and beauty of their work, becomes a secondary object. This is indeed bowing down to the golden calf; it is laying on its altar our honesty, our morality, and all our high hope of great achievement. There is, in the labor of filling teeth, particularly in the more difficult departments of the art, great room and scope for moral culture, and I contend, that just in proportion as the best material known is used, just in such ratio will be the perfection of the whole operation. I do not believe the same time and care *can* be taken to prepare a cavity for a filling, where we know, in consequence of the imperfectability of the material to be employed, the operation must needs be of short duration of usefulness.

There is, in the mind of man, a great distaste to doing any thing that is not to serve some end, and may we not say, a natural honesty, that prevents him from doing that with his whole heart, which does not benefit some one. I once heard an anecdote which very happily illustrates this: a poor man called upon a gentleman for some assistance, saying he would be very glad to work, if he could only procure it; the gentleman benevolently desiring to assist him, though he had really nothing that he needed he should do, told him he might remove a pile of stones he pointed out to him, from one side of the road where they were, to the opposite side. The man went to work, and diligently, and in the course of the day removed them, and piled them nicely on the spot indicated. When he had finished and received the money for his labor, he asked his employer if he had any thing more he wished him to do, he would be very thankful for any small job his honor would give him. When told he had nothing else, except he chose to carry the stones all back again, he demurred, and said, "Inda'ad, yer honor, there is no use in *that*, at all, at all, and it would only be putting the money into me own pocket, without a hap'orth good to any body else—so, though I want work, I can't do that."

Let each man who is tempted to use an inferior stopping for a tooth, either from the ease with which it may be introduced into a difficult cavity, its cheapness, or any other self-indulgent cause, think, for one moment, whether any great good is to be gained except the fee which he dishonestly receives. If this is all, he is prostituting his calling to base uses, and can never, by any chance, be anything better than a mountebank.

But I have digressed widely from my cases, which shall be reported and jotted down as they progress.

Case No. 1.—Left open for three days, pain and soreness gradually subsiding, though the periosteal membrane was still tender to impressions of cold air; in ten days the abscess entirely disappeared, and the tooth almost regained its color—the last five days of which it was kept filled, not tightly, with cotton, which was saturated with chloride of zinc. In three weeks from the first opening, it was refilled to the end of the fang, and has since been perfectly comfortable.

Case No. 2 has also been apparently successful. After a complete and thorough cleansing of the fang, and repeated washings with warm water, it was left to free itself of its impurity, and at the end of five days, all soreness having left it, it was kept loosely stuffed with cotton, saturated with chloride of zinc, and in fifteen or sixteen days filled to the end of the fang. Upon examining the three remaining incisors, the same treatment was very plainly indicated, and they have all been treated in the same way, and with the like apparent success. The patient herself expresses the greatest satisfaction, and gives the strongest evidence that can be given of feeling of health—"that they don't feel at all," or in other words, she is not conscious of her teeth. If they are in like condition two years hence, the treatment will not have been in vain.

Case No. 3 is finished to my own satisfaction, and very much to the gratification of the lady; but time, that tests all our operations, must show whether it was well or ill advised to attempt the rescue of a molar from the forceps, which, in the opinion of one of the best operators of New York City, was fit for nothing better. On the next day after inserting my pledget

of cotton and chloride of zinc, I took away, as I had hoped the remainder of the membranes from the fangs, and in three days more, finding no inflammation supervened, I proceeded to the filling of the tooth, which, as I knew it would occupy several, perhaps five or six hours, I undertook on New Year's day—a day so generally observed as a holiday, that interruptions were not likely to be so frequent as usual. After filling both the fangs to the floor of the main cavity, and burnishing the fillings, I proceeded to build up the crown to the tooth the inner or lingual side of the crown was broken down to the margin of the gum almost, and also round the posterior part In filling this cavity, I made a number of pellets, of an eighth and some of a quarter of a sheet of gold, No. 4, and packing firmly into the bottom of the cavity; after securing nearly two sheets in this way, built a wall of gold along the lingual border, and making this wall very firm, to a height rather above the outer edges of the tooth, packed into the center and along the anterior border, with gold folded in half sheets, making all the pressure directly towards the center and bottom of the cavity; after putting away between seven and eight sheets in this way, began to consolidate the surface, and to press in all the ends of the folds that had been introduced, and then burnished the whole surface carefully before allowing any saliva to moisten it. This is, perhaps, one of the most important and least heeded points in perfectness of the operation of filling teeth, for I contend that no gold can be made perfectly solid, if a particle of moisture is between the laminæ, and that, if kept entirely dry, it may be packed on, one fold on top of another, and so made to take *any* shape, or attain *any* height above the main cavity that may be desirable. I know this has been doubted by some, who contend that the folds of gold must be pressed laterally against the walls of the opening, and then a wedge-shaped instrument inserted to make room for more, and so on till the cavity is full; but is it full, if it is so soft, as it must be at the bottom, for with little or no direct and forcible pressure in the direction of the floor of the cavity, until after all or nearly all the gold is put in, it will not then yield except just at the surface.

and there it may be made hard; but it is hollow and soft within, and the ordinary wear of mastication soon proves it to be so, for it sinks below the surface, and thus becomes a receptacle for food, and probably caries commences at the edges, and so the perfectability of the work is lost. So important do I consider this absence of moisture to be, that in cold weather I warm all the gold, after it is cut and folded, on a plate which is over a small spirit lamp, and also warm all the instruments used in packing the foil, thereby preventing the condensation of the atmosphere of the mouth, which, when the thermometer is at 15° or 20° in the open air, is quite sufficient to prevent gold from adhering and making a compact solid filling.

But to return to New Year's day. After the surface had been thoroughly burnished, it was thoroughly filed with smooth bent files, and then stoned with Scotch stone; after which pumice and sôft wood were used, and then the whole was reburnished with a polished steel burnisher and soap. In one week the patient said the tooth, which, prior to the operation had been worse than useless, as it prevented her using that side of her mouth, felt perfectly well; she was using it freely, and soon expected to forget anything had ever ailed it.

Case No. 4.—A young lady, sixteen years of age, has been, since twelve, under the care of a so-called *surgeon* dentist, and truly he has thought to prove his title to the name, by extracting nearly all the poor child's teeth, saying they could not be filled, and nothing else was practicable but the use of the forceps, forgetting the maxim a dentist should ever remember, "to extract is not to cure, but to destroy." In this case, the central and lateral incisors on the right side, having been somewhat, though slightly, tender, in excavating preparatory to filling, arsenious acid was introduced, which allayed the pain truly, but, unfortunately, did a great deal more, for the absorbent vessels took it up and destroyed the membrane and produced discoloration of the tooth and abscess. Now this partial tenderness of the carious portion of the bone, can generally be entirely removed by dexterously cutting it away with a sharp excavator, or, if the patient is unwilling to bear the momentary pain of

this, an application, for a half hour, of chloride of zinc, wi almost always effect the object; if all the portions of softene bone be then carefully removed, the tooth can be filled with a much force as is necessary to make the gold perfectly solic The question is often asked, why is the bone so tender and ex quisitely painful as it often is, at the commencement of exca vating, and yet sometimes entirely painless when the disease portions of it are removed. Why should it not be attribute to inflammation. The teeth, though not highly organized, ar supplied with a nerve in each fang, an artery and a vein; thes give the internal vitality to the tooth, and pass that vitalit through its whole bony structure, till they meet the enamel If, then, the branches of the nerve pass through the whole bon of the tooth, to the investing surface, called enamel, it is eas to understand how the minute ends of these nerves may be ex quisitely sensitive when there is caries and inflammation. It i in the experience of every one who has practiced dental surgery that when he has cut into the pulp cavity, and severed the con nection between the bony surface immediately over it and the nerve and blood-vessels, the pain which was felt before in al parts of the tooth, immediately ceases, no portion of the cavity then being tender to the excavator, but the membrane or nerve. Does not this seem to prove, conclusively, the nerve to send minute microscopic branches through the whole tooth, which are the medium of sensation as long as the connection between them and the bone is not ruptured. This has been my own theory for many years, and I have acted on this theory in my practice.

The central incisor of which I just spoke, was the immediate cause of the application for aid. Finding it filled on the ap proximal surface, between the central and lateral, I removed the filling, and was obliged to cut through a thick septum of bone to enter the cavity. Here I found what I expected, a total de composition of the vessels, and an exceedingly offensive dis charge; washed with warm water, and left it open, and then treated the lateral tooth in the same way, finding it in the same condition. Further examination of the mouth showed the bi-

uspid on the right side carious, and the inner or lingual cusp broken away; the molar on the same side also had a large cavity in its grinding surface. These were both under the ban of the *surgeon*, and yet neither of them had penetrated to the nerve cavity. They have both been filled without any other difficulty than could easily be overcome by care and perseverance. The bicuspid and remaining molar on the other side were in a much worse condition, being both decayed to the membrane; the bicuspid was broken away on the posterior portion, and after the nerves were removed, it was filled with gold, and the crown built up into its original shape. The molar, though not broken away as the bicuspid, was more difficult, as the orifice through which all the nerves were taken out, was very small; these were, however, after some difficulty, removed, and then filled, and the orifice in the crown also. The incisor teeth have been perfectly comfortable, and are much whiter than prior to the operation.

Case No. 5.—A treatment for irregularity of the superior denture. Patient twelve years of age; all the superior incisors closing within the inferior, and cuspidati somewhat prominent. This was easily remedied by a stiff hoop of gold plate, so bent as to press on the surfaces of the cuspidati, leaving space between the incisors and the hoop, of just as much as it was desired to bring them forward. The upper edge of the hoop was then filed so as to leave opposite to each of the teeth a piece of the plate to fasten a band of india rubber, which, from its elasticity and constant traction, in a week brought the teeth into the desired position, closing entirely anterior to the inferior maxillary. The india rubber loops were then removed, and ligatures of strong thread substituted, which will be changed every three days until the teeth have become perfectly firm.

To-day, have had the pleasure of seeing some fillings, in the mouth of a lady, by one of our best operators. They were well placed, and most of them firm and solid, and would have been faultless, if, (oh, how often that little word comes in to spoil our brightest dreams of perfection,) if the bicuspid teeth had been properly shaped at the edge, between the cusps; but here

was what I conceive to be a great error—the separation b tween the teeth had been made with a knife-edge file, and th portion of enamel between the filling and the end was so thi that it has broken out, and thus exposed the ragged edge the filling. There are no teeth that require more skill and ca in the formation of the space between them, and also of th cavity to receive the filling, than the bicuspids.

Three things are absolutely necessary to success in thes fillings: first, the space should, if possible, be so filed as tha if it closes it shall not meet a corresponding flat surface on th adjacent tooth, i. e., shall be filed wider on the lingual than th buccal edge; second, the lower part of the cavity, or that be tween the cusps, shall be cut away, either with a sharp-edge cutter or a suitable file, until the border of the cavity is firm and strong; and thirdly, the upper edge, which is often unde the free margin of the gum, should be very square and firm not cut under in a deep groove, as it often is—for if so, inde pendently of the difficulty, almost the impossibility of makin that part of the filling compact—then their edges will brea away, and then caries progresses, and that part of the cavit being nearer than any other to the internal membrane, *it* i soon reached, and if not then timely arrested, the entire loss o the tooth is inevitable. Many persons who fill ordinary cavi ties very well, fail in bicuspids; and perhaps some of them from not making as free use of the file as is necessary; in these teeth, especially, a very free use of that valuable instrument i absolutely necessary.

One of the difficulties attending this operation, is that of ex cluding all moisture; we often find, even after effectually pre venting trouble from the duct of Steno, that we have an oozing from the gums themselves, and very frequently from the firm margin of the gum between the teeth. In some cases, this difficulty may be avoided, by using a piece of wood cut in the shape of a dove-tail, with the broadest surface to the gum; i this is forced between the teeth tightly, all danger from tha quarter is prevented. In other cases, from the gum hanging down at the edges and rising in the center, like a festoon, this

nay be inadmissible; here a piece of soft cork may answer well, r a piece of tissue paper twisted into a rope.

The dentist who would be able to conquer all difficulties as hey present, must be very fertile in expedients; every law of nechanics should be at his control; all the arcana of the ciences should be thrown open to him, and they should be is ministers, if he would be successful.

Some dentists are in the habit of filling the fangs of the teeth, fter having taken out the nerves, with tin, and then filling the rown over it with gold; and others, as would appear from a ase of to-day, put in a little stopper of tin, after *soothing* the nerve, and leave the membranes in the canal, to produce sure rouble afterwards. The case I speak of, was treated by a sur-geon dentist in New York, of great name—but it seemed to me o have been conducted on the most approved principles of "old grannyism." The nerve was found in the canal, an offensive nd putrefying mass. This was thoroughly removed, and the ang washed out clean to the apex, then filled with gold, and he crown built up into its proper shape with the same metal, he only one fit to use in a tooth.

ARTICLE V.

A Test of Levett's Patent Enamel, and its Discovery. By C. T. CUSHMAN, D. D. S., Columbus, Geo.

"*Discover* differs from *invent*. We *discover* what before existed, though to us unknown; we *invent* what did not before exist."—*Webster's Dic.*

MR. EDITOR:—You will surely excuse a short commentary on "one of the greatest dental discoveries of the age," since, by a relation of my own experience with this so-called "new discovery," I hope to gain, in return, that of some of my professional brethren.

I have before stated, publicly, that a suitable *enamel* for

covering dental plates, was still a *desideratum.* I stated thi after the *modest* announcement of M. Levett had appeared that his "philosophical and chemical composition is destine to effect a thorough and extensive change in the practice of th dental art," and before I had personally *tried* it. Havin since paid $50 for the privilege of making experiments, an given them, as I think, a sufficient test, I can now say posi tively, that I think a suitable enamel is still a desideratum i mechanical dentistry, and, perhaps, *always will be.*

It was principally through the *unqualified* recommendation of *eminent* dentists, in various parts of the Union, which wer shown me, that I was induced to purchase; and I can readil believe that the discoverer, as he admits in his circular, *is*, t an eminent degree, indebted "to his professional brethren, fo their enlightened, generous and disinterested testimony."

I think it was most *too* generous, too *un*enlightened, an the "patent enamel" a substance of no practical value, notwith standing it may have been introduced into the "most intelli gent and fashionable families."

Waiving all such *substantial* claims to merit as the foregoing or that it has a "sweetening influence on the breath," (!) shall proceed to give the result of my own experience.

The first plate to which I applied it, after finishing and per fectly adapting it to the mouth, was one sustaining two supe rior incisors, in a mouth whose gums were generally prominen when speaking. I allowed the plate to turn up in front, abov the teeth, and enameled this portion, in order to fill up the los of substance of the gums, &c., and to obviate their depresse appearance. I also enameled the entire plate within the arch and the tips of the clasps. The coating flowed well, an looked fair and comely; but, on trial in the mouth, I found th plate so *warped* by the process, (contraction of the enamel,) tha it would not fit at all! In attempting to obviate this, by forcing it slightly, the enamel began to fly off in scales, as a matter o course. Notwithstanding a piece of enameled silver was ex hibited by the sole agent of "exclusive rights," which he ben double and back again, repeatedly, without detriment—(per-

haps this was "Japan," or other varnish,*)—enameled mouth plates will not bear the least bending or *springing* without cracking off the enamel coating.

That part of the plate in front, above the teeth, when seen upon the gum, did not appear natural, although well imitating the *color*. A thin or single coat will not sufficiently color the gold; and more than one, on so small a surface, gives a *rounded* or cylindrical body; the line of union with the gum appears at once prominent and *artificial*, unlike a gum-tooth, which can be ground to a thin edge.

I therefore was obliged to take off the whole enameling, and for this purpose boiled the piece in muriatic acid, until the whole substance was removed; then re-adapted it. I shall, perhaps, be told, "your plate was too light, sir." I reply, it was about No. 29—not *heavy*, 'tis true, but all-sufficient for the case. It has since been daily worn, *without* enamel, nearly a year, and has never come back for alteration or adjustment.

A heavy plate enameled is *clumsy* in the mouth, and an obstruction to the tongue. Such an one, enameled on *both sides*, (as I have seen,) is intolerable and absurd. It may answer to *exhibit* to those who know nothing of the subject practically. By putting it on the gum side, the accuracy of its *fit* is defeated: it first flows into and fills all the depressions, leaving the prominences, thus *leveling* the surface in effect as if the casts were pared down.

The next case which I shall relate, was that of a temporary set for the lower jaw, on silver plate. The process of enameling was apparently satisfactory—gave a good coating and color. In less than *two months* I saw it again, and it presented a very ugly appearance. Parts of it were *scaled off;* the whole was rough and faded, as though it had been acted upon *chemically* by the juices of the mouth. However, I believe the "enamel" is not generally amenable to this charge. But it was evident, in this case, that the secretions were powerful enough to act upon it. As it then presented itself the coating was decidedly obnoxious.

* See Patent Specification, Dental Recorder, vol. ii, p. 218.

CASE 3.—An upper set on gold plate. Such very long teeth were required for this, that gum-teeth were too short to allow accurate fitting to the plate on the inside.* After enameling, this looked very well. Four months afterwards it came under my notice again—the wearer wishing to have the "stuff got off," and with some show of reason.

That part within the circle of the teeth was good; but all *without* was cracked off, *carrying with it considerable portions of the gum-teeth*, where they were ground *thin*, to fit close to the plate. Thus they were left mutilated, rough, unsightly and unpleasant to the lip; in much worse plight than before, and irremediable. This result I have observed in several other cases, and the reason appears to be this: the artificial tooth, particularly when *ground* and fitted, presents a porous surface, for which the patent enamel has a great *affinity*, and unites with it inseparably; whereas the gold plate offers no such conditions, and it by no means retains such a degree of adhesion.

The shrinking of the enamel on cooling is also unequal to that of the gold, so that every similar case, where it has been used for a *filling in* or "packing" substance, to close perfectly all joints and recesses between the teeth and plate, I apprehend it has *always* failed.

This is really the use for which, in my opinion, as I have stated in another place, a perfect enamel is still "a desideratum;" one for which Levett's patent will signally fail.

This plate, as well as the one last before mentioned, was heavier than the first; all three, indeed, sufficiently so for any similar case, neither of them springing under the hand. Nos. 28 and 29, I presume all will admit, are heavy enough, (when alloyed to twenty carats,) for most upper pieces, and No. 26 for lower.

It is not the springing or *warping* of plates alone, that wrenches it off, but the *concussion* against the artificial teeth in use, which cracks and breaks it up immediately around them—

* This is a fault that our present style of plate teeth, particularly molars for *lower* sets, will possess, until they are made at least *as long* on the lingual as on the buccal side.

as a blow upon a tree coated with ice, after a winter's rain and freezing, will fracture the glassy coating remote from the point of concussion.

In this last case, the teeth were arranged to antagonize so as to receive the lower front teeth on their cutting edge, by reason of necessity. In case No. 2, the greatest breaking up was along the molars and bicuspids, which antagonized directly with a corresponding artificial set above.

It has been objected, on the score of defence of this article, that the plates must be sufficiently thick. It is possible, therefore, that a small *horse-shoe*, enameled, might stand in the mouth, if never used in mastication. But what said the agent of patent rights to his customers, who apprehended that it might probably scale off by use? "Do you see this?" bending his enameled (query, *japanned?*) strip of silver, quite double, and then reversely double—"well, that has been done perhaps a hundred times;" and verily, it showed no detriment. But was it a fair sample? A simple coat of some kind of *varnish*, I am inclined to believe. However that may be, let no one flatter himself that *Levett's patent enamel* will stand the slightest bending of the teeth plates on which it has been vitrified; and even a few scales broken away, will make it unsightly, and exceedingly unpleasant to the sense of touch.

I have written the foregoing results of my experience, Mr. Editor, not with a view to disparage merit, nor to discourage a zealous pursuit of discovery and improvement—for I have repeatedly admitted the *desideratum*—but in hopes of getting the experience of *others* with it, through this same medium. I must believe that but few of those who recommended it, had fully and fairly tried it themselves; and that all who purchased the "exclusive right," would now be willing to sell out their stock at a large discount. For my own part, I think I would be content with ninety per cent. *off*.

I now propose to examine, briefly, the claims to "this new discovery of Dr. Levett's." Delabarre has given a process for enameling plates: Desirabode another—which he, with much candor, does not speak very highly of. It is no new thing in

France. Jewelers have enameled gold, perhaps since the days of Solomon, or since the days of glass manufacture. This kind has also been applied to dentized mouth-plates, and, (like all kinds,) as Desirabode says, pieces so enameled "do not last long."

De Loude, an English author, and old practitioner, in detailing a case of an entire dental apparatus for both jaws, which he constructed in 1836, says: "After this, I prepared the whole for enameling, (in a little muffle of a furnace,) the color of the plates corresponding with the inner side of the mouth; and to the cases that represented the back grinders, I gave a color to correspond with the teeth."*

He thus speaks of enameling as nothing *recent*, but of common practice, fourteen years ago; and only to say that he employed it in this case to obviate the "peculiar taste" which his patient experienced on wearing his former sets.

In 1834, there was a dentist in this town, Dr. H. Balsan, from Berlin, who enameled his gold plates. I have been told, by persons who have worn them, and seen them after having been worn, that the *enamel* did not stand much usage before it began to *scale off*.

ARTICLE VI.

Observations on Exostosis. By D. VANDENBURGH.

THE disease of the roots of teeth, commonly called exostosis, is different, in several respects, from exostosis in bones. It is not, like the latter disease, a growth of bone from bone, but a deposition upon the root, of a material similar to the root itself. It does never, like exostosis in bones, present an internal cancellated structure, but is of the same density and appearance throughout. It is evidently a result of inflammation,

* Surgical, Operative and Mechanical Dentistry, p. 167.

and is never found in an active state when inflammation does not exist to a considerable extent. It is not confined exclusively to the roots of carious teeth, though these are more liable to its attacks, but is frequently found upon such as, to all appearances, are sound and healthy above the gum. It is in appearance an enlargement of the root, similar to it in color and density; sometimes in form like a rough irregular belt around the body of the root, leaving its apex of the natural size and shape; sometimes a simple tubercle upon one side, or on the apex; and occasionally it appears evenly spread over the whole surface of the root. It sometimes extends around all the roots of a tooth, forming them into one mass; and Prof. Harris has recorded an instance of two teeth united by it.

The origin of exostosis seems to have very little or no direct relation to temperament or constitutional habit, but is dependent entirely upon local causes. Climate, it may be, may have an indirect agency in its prevalence, since frequent and considerable changes or temperature have no slight agency in enhancing the inflammatory diseases to which exostosis seems more directly to owe its origin.

The commencement of this disease is usually upon some root to which the investing membranes have yet at least a partial attachment, and about which a natural process is going on for its ejectment. This consists of a gradual absorption of the alveolar processes about the root, by which it would in time become loosened and entirely separated from the jaw. This process involves a necessity of increased action or irritation in the part, which is ready to become inflammation with the slightest exciting cause. If, as usually happens, there is an inflammatory action in the gum surrounding the root, or teeth adjoining it, these two points of increased action naturally extend towards each other, and, uniting gradually, increase until the periosteum becomes thickened, and closely interwoven with large, sluggish blood-vessels, some of which, like those of the healthy periosteum, ramify into the bony substance of the root, and by assuming a peculiar action, commence a deposit of new bone around it.

The tendency of inflammation in directing itself toward t
increased action of the absorbent or the secreting capillaries,
not only very curious, but very difficult of explanation. Natu
seems to have given to each part of the body a peculiar power, b
which disease is directed toward such a course as most speedi
and effectually to terminate itself. If we take, for an illustratio
a tooth, worn down so near the nerve that the action of irritan
becomes painful to such an extent as to produce inflammatio
we shall find this inflammation, most likely, to act, not on th
absorbent, but on the secreting vessels, so that, instead
an absorption or destruction of the nerve, we shall have
new deposit of bone, which, by changing the nature of th
tissue, guards it against irritation, and cures the disease. Bu
if we take an illustration from inflammation acting upon th
jaw or alveolar processes, we shall find it directing itself *her*
toward the increased action of the absorbents, and not the se
creting vessels, as in the tooth. This tendency to peculi
results in different organs, is the only explanation we can giv
why a disease operating upon different parts, though similar i
their nature, and in contact with each other, should produc
such dissimilar results. It is in accordance with the natura
and peculiar tendencies of the parts, that inflammation shoul
act upon the secretory vessels of the tooth, and the absorben
of the jaw, so that in the occurrence of exostosis, the pecu
liarity which occasions the new action and deposit of bone, i
not so much in the disease itself, as in the tooth which
affects.

Inflammation resulting in exostosis, may arise from disease
gums singly, and sometimes, though not usually, it is commu
nicated from the pulp, through the orifice of the root. Onc
established, it is fully capable of extending itself, and em
bracing adjoining teeth, whether previously diseased or healthy
While the periosteum is highly inflamed, and the exostosis i
increasing, the root within presents a natural appearance, bu
the tumor is usually a little whiter, more nearly resembling th
tooth bone of the crown. But the exostosis and the roo
within it, is sometimes of a partially transparent and gelatinou

appearance, and softer than healthy tooth-bone or ordinary exostosis. This appearance, however, seems never to occur during the active stage of the disease, but only where, by absorption, the alveolar processes around the root have been removed—or from some other cause the inflammation has partially subsided, thus arresting the deposition of bone, and leaving the root as a foreign substance to be acted upon by the absorbents, which remove a part of the calcareous matter, and thus produce the softness and semi-transparency.

It is not always easy to determine the existence of exostosis from the external appearance of the parts. There are usually, however, some peculiar symptoms attending it. Teeth affected by it are sensitive to pressure, particularly if it be quick or rapid, and the pain, though not sharp, seems to be deeply seated, and felt over a large surface, and is often followed by acute neuralgic twinges shooting along the nerves of the face and head. When the exostosis is large, and situated about the body of the root, an unnatural fullness and breadth of alveolus is observable; but should the disease happen to be upon the point of a long root, it might increase to a considerable size, without giving any such indication of its existence. In every stage of the disease, there is always more or less inflammation in the alveolus and gum surrounding it, though these are not always morbidly sensitive or painful. In fact, the disease often progresses to a considerable extent, without giving any painful indications to the patient of its existence. Still it often increases so as materially to interfere with the surrounding parts, and occasions a dull, constant, pressure-like pain, often expanding into head-ache and neuralgia.

The nerves of such teeth as have lost their crowns by decay, and are affected with this disease, are usually dead before its commencement, but I have never found the nerve canal closed at the point of the root, however thick the exostosis may have accumulated. Where it has extended to teeth whose nerves are alive, it may become the cause of the most afflicting tooth-ache, particularly if their crowns be sound, or their nerves unexposed—for the inflammation, following the periosteum of the

root, reflected into the internal canal, may extend to the pulp which, confined within the unyielding limit of its walls, be comes the seat of the most severe pain, ultimately resulting i the death of the nerve. Only under these circumstances is th inflammation consequent upon exostosis, likely to result i alveolar abscess; but when this occurs after the death of th nerve, and the impossibility of the consequent purulent matte escaping by any other means, an abscess is necessarily formed which sometimes remains permanently open, and constantly discharging matter; in which case it acts as a palliative to the inflammation about the root, reducing its intensity, and arresting the deposit of bone. Should such a tooth be extracted some time after the formation of the abscess, the exostosis and root will be found in the soft, semi-transparent state previously alluded to.

Though exostosis upon a dead root seldom, if ever, results in abscess, an abscess, after subsiding, often leaves a chronic inflammation, which may result in the commencement of exostosis.

Exostosis, when existing to any considerable extent, almost invariably produces neuralgic diseases, often of the most severe character, and by no means necessarily confined to the face and head, but traversing, apparently at their choice and will, every part of the system, and yielding to no remedies so long as the exciting cause remains. The removal of a tooth which is the cause of neuralgia, may bring on a paroxysm of the most alarming nature, and often of considerable duration, but once subsided, never to be felt again, unless other causes of the same nature remain.

In the treatment of this, as in other inflammatory diseases of the mouth, every irritant, and every tooth affected by it, should be at once removed. So long as any tooth thus affected remains in the mouth, all remedial means will be entirely inefficient, and often, when such is the case, the disease, instead of being cured, seems merely roused from its slumber, and to rage with increased violence.

OSWEGO, N. Y.

SELECTED ARTICLES.

ARTICLE VII.

James Taylor, M. D., *on Filling Teeth.*

[Continued from January No.]

Before I give any special directions as it regards the finishing of this important operation, I will take up the other classification of cavities which I have given. I do this because the finishing of a plug requires about the same manipulation in all cases. The next locality of cavity is the second in my classification, or the labial. This location of disease is not of so frequent occurrence as the central or approximal; yet of so frequent occurrence as to demand a separate description. They appear to be the result of two or three physical conditions of the teeth and fluids of the mouth. First, we have of the teeth, and especially of the inferior molars, and sometimes, it is true, of the superior—an extension, as it were, of the transverse sulcure running from the center of the tooth to the labial surface; so that the tooth appears to be divided by a medial line. Decay may take place at any point on this line, and be, in its general character, the same as that originating from the same cause, and located on the grinding surface of the tooth. But as we advance forward, and find cavities on the labial surface of the teeth, we generally find them located nearer the margin of the gum, and often dipping beneath its free edge. The thin edge of enamel which terminates at the neck of the tooth has been destroyed by some corrosive fluid, or the gum has receded, leaving the bony structure exposed, so that we have a softening of the dentine, and a shape of cavity running transversely of the tooth, and if the disease has been permitted to extend itself, we shall have a cavity the shape of a half circle, with its base formed by the enamel and bone, and the circular line extending around under the gum. This decay is not, however,

always thus circumscribed, for at times it may be found entir
confined to the enamel portion of the tooth, forming a rou
pin-head cavity. The teeth most subject to this form of dec
are, I think, the upper front incisors, next in order the later
then the canine and first bicuspids inferior, then the canine s
perior, and molars inferior, &c. &c. The preparation of
these cavities cannot well be accomplished with the same i
struments or in the same manner. The small round pin-he
cavities, after having been thoroughly examined, and the enam
removed which covers the decay, can be very neatly and exp
ditiously prepared for filling, with a small burr-head drill.
the cavity does not penetrate deep into the tooth, the burr-he
should be flattened to represent a half sphere. (They are in t
common use to need a description.) A drill of this descripti
will, if selected of the right size, make just such a shap
cavity as is most desirable when the decay is not partly cove
ed by the gum. These drills should be sharp, for a drill whi
cuts rapidly hurts no more, if not less, than one which cu
more slowly, or requires considerable pressure to make it cut
all. The only objection to the use of this instrument is, th
it produces, generally, more pain than the cutting instrument
When this is the case, use the excavators to remove the cariou
portion; and then shape the cavity with the drill.

When the cavity runs beneath the gum, the drill is not so ac
missible, first, because the cavity is not so round, and second
as the gum may be in the way, or too much of the tooth ma
have to be cut away to make the cavity round. The shape o
cavity already described, with its base extending across the tooth
and its circle extending under the gum, is most desirable; be
cause the decay takes somewhat this form. We will find, gene
rally, no difficulty here in making the wall of the cavity, whic
forms the base, of sufficient depth to well secure a filling
but that portion which extends beneath the gum will requir
more care, for as the tooth diminishes in size as we advance o
its neck, so will the cavity diminish in depth. If the decay
should be deep, the nerve lies close at hand; if not, the uppe
border of cavity must be shallow, and this is the first part to b

lled. In the preparation, then, of these cavities, we would, fter removing that portion of decay most exposed to view, arefully, with a suitably shaped excavator, cut away the decay round the border of the cavity underneath the margin of the um, and form this portion, slightly beveling inward, so as to nlarge at this part a very little the cavity within. This is done o that the first fold or block of gold, when forced well into its lace, may be securely retained. A grooved necked cavity is ot that which is desired, but simply a beveled condition of hat portion of the wall which is overlapped by the gum. If his is formed with an instrument, the cutting edge of which omes to right angles, a grooved surface to the wall of the avity will be easily avoided. No condition of decay requires nore careful manipulation than the one now under considera- ion. The plug is more exposed to view; also to the action of he brush, the daily use of which may be requisite to prevent he further progress of the disease. We are often, too, exceed- ngly annoyed with extreme sensibility of tooth bone.

These cavities, when located on the incisors and bicuspids, bove or below, although presenting difficulties in the proper ormation of the cavity, yet in the filling itself, these difficulties re much increased as we advance back in the mouth; so much o, indeed, that the dentes sapientiæ, superior or inferior, when resenting labial cavities, may be considered among the most ifficult to fill of any in the mouth. These teeth, however, vhen much decayed, and the others in anything like good con- lition, are scarcely worth an effort to preserve, yet their preser- ation must depend on their utility for mastication and other urposes, which must be decided by the judgment of the perator.

The extent of disease in these teeth, (the molars and dentes sapientiæ,) will control, as a matter of course, the form of cavity; sometimes a round, and at other times an oblong, shape will be presented; frequently the decay extending from approxi- mal to approximal surface; and when this is the case, great care is necessary in the formation of the cavity. That portion of the cavity having its walls formed by the neck of the tooth

and the solid enamel and bone which forms the cutting surfac will present no difficuty in a proper adaptation to retain a plu but the posterior wall, also anterior, will require a little mo care, especially when the cavity runs nearly across the toot and for this reason: if these are cut with the plane of the w pointing toward the center of the tooth, we shall have a cavi running transversely with the tooth, far larger on its outer c cle than within, so that the plug would have to be retained e tirely by the side walls of the cavity, and the tooth left subje to that very condition of things which we so often see occ after a filling of this kind, viz. a continued progress of dec running around these teeth, as it were. The cavity not havi been properly formed, the gold is not so compacted as to exclu the moisture; hence the bone continues to soften at these poin The posterior wall should, therefore, be made so as to apparent lean forward, and the anterior running in, so as to maintain t size of the cavity within. If these suggestions are proper observed, the introduction of the gold will be rendered less di ficult, and the filling more secure.*

Having alluded to the shape of cavities most frequently o curring in the localities under consideration, we will next spea of the introduction of the foil; and first in those last describe Here we take, as an illustration, an inferior posterior molar, ha ing a cavity extending quite from approximal to approxim

* I have occasionally filled these teeth, (the inferior molars,) when t decay extended on to both approximal surfaces. I have then shaped t walls of the cavity at the neck of the tooth, and that formed by the sol portion of the crown above, beveling inward, enlarging the cavity a litt within its orifice. This shape of cavity is particularly obtained at th posterior extreme of decay. Where the foil is first wedged in, and, to great extent, consolidated, before the anterior portion of the cavity is fille the first gold here introduced, forms the posterior wall for the last part the plug, and the enlarged condition of the cavity within, prevents the fir portion of the filling from being displaced by the pressure made in intr ducing the balance of the plug. The condition of the cavity is such, ex tending almost half round the tooth, that the plugging instruments can b introduced on a line with the length of the cavity, and the gold thus com pacted into this enlarged cavity without any difficulty.

surface. The cavity having been shaped as described, the first difficulty which presents itself, is easy access to the cavity with suitable instruments for filling. The second, exclusion of moisture. The first difficulty can generally be overcome by the use of the speculum; and when this is used, the second difficulty is also overcome at the same time. To secure both objects at the same time with this instrument, we would place on the tongue the end of a napkin folded lengthways, and so as to give one corner as the folded end; this I would throw around the dentes sapientiæ, placing the end next the cheek. The speculum is then secured on this, so that the tongue is held in place, and the folded end of the napkin pressed against the cheek. The bars forming the speculum should be somewhat wider apart than those used when filling central cavities; flattened and widened out, and slightly turned up, so as to form a cheek-holder as well as tongue-holder; or the cheek can be held away with the ordinary pearl cheek-holder, yet this will not so effectually secure a napkin to absorb the saliva.

All admit the importance of keeping the cavity dry, and all must admit the difficulty sometimes experienced in accomplishing this object. That method which practice has made most available, should, of course, be adopted by every operator. I therefore merely give that method of which I most usually avail myself.

These preliminaries having been gone through with, and the cavity dried, the next thing is the insertion of the gold. That method which accomplishes this object in the shortest time—filling up completely the cavity, will, I have no doubt, be considered the best.

This remark is applicable, especially when we remember that these cavities cannot be kept dry for an indefinite length of time. My former method, and one which I sometimes yet pursue, is done in the following manner: roll up, in a cylindrical form, as much or more gold than is necessary to fill the cavity; then fold up one end of this roll into a ball as large as can be forced into the cavity; then, with a sharp-pointed plugger, press this into its place, folding in as much of the roll

thereafter as is possible. There are objections I know, to this method, for the quantity of gold first introduced may be too large to secure a perfect adaptation of the foil to every part of the cavity; or the mouth of the cavity may be choked up, as it were, before the interior is well filled. I have, therefore, of late, more frequently resorted to the plan already described, for the insertion of gold in the central cavities. I would have my blocks of gold so arranged that each would require slight compression with the plugging forceps to pass readily into the cavity. The plugging forceps here used are bent at near right angles. The first block used, however, here, would not always be the largest; but after placing the first block to its place, close the forceps, and using it then as an ordinary plugging instrument, force back the lower end of the block, (or that end within the cavity,) to the posterior wall, which, you recollect, is made slightly leaning forward; then, with one or two backward motions of the instrument, force the protruding end of the block out of the way of the next one to be introduced. Then, as each block is inserted, compress back against the first one introduced, completely filling up the cavity as you advance anteriorly, when, with a smaller pointed plugging instrument, a few folds of the strip to which the last block belongs, must be forced in. We are now ready for the compression, and if this can be used with considerable force, before the moisture has got about the gold, the success of the filling is certain.

The question here may be asked, is the compression which is necessary to be made, to compact these blocks, made with the plugging forceps? I answer, not always—yet, to a great extent, such is the case; but I always have ready one or two of such ordinary pluggers as are most apt to be needed, and occasionally use that which may be apparently demanded to arrange and force into place these blocks, also to make pressure around the border of the cavity, and all over the gold, to see if it is well compacted.

The plugging of these large labial cavities, when located far back in the mouth, with foil cut in strips and folded in with the

plugging instrument, I have always considered a difficult, if not almost an impracticable operation. The time requisite to arrange these folds with an instrument, and at the same time compact them in the cavity, is generally longer than such cavities can be kept dry. After the blocks are prepared, they are much sooner inserted, and when in are far more systematically arranged, and to make the plug equally solid, do not require near the same amount of pressure.

The filling of these labial cavities seated above the gum and on the medial suture dividing the outer prominences of the tooth, require scarcely a separate description. When not large, they can generally be shaped with a drill, and filled with a few blocks, as described in such cavities when central. Those in the superior molars, requiring different means to hold off the cheek and keep the moisture from the cavity. To effect this, I use, when the posterior molar or dens sapientiæ is to be filled, the common pearl cheek-holder, holding the end of a folded napkin between this and the cheek, almost entirely filling and compacting my gold with the plugging forceps; but before displacing my cheek-holder, I always use considerable force with my compressing instruments. All these plugs which we have been considering, will first need, (after having been as far as possible consolidated,) the free use of the file, so that the gold may be leveled down and rounded to resemble the natural contour of the tooth, and so that the edges of the cavity may also be made smooth with the surface of the gold.

We come now to speak of the filling of those cavities on the labial surface of the incisors, canine and bicuspids—those located so far from the gum as to be entirely surrounded by healthy enamel, are generally round, and should be filled when the cavity is small, so as to be as little observed as possible. These are generally shaped with a drill, and when very small can be as well filled by taking four to six thicknesses of No. 4 or 6 gold foil, cut into a strip not wider than the breadth of cavity. The first fold of the gold should be carried to the bottom of the cavity, and each succeeding fold also carried as near the bottom of the cavity as possible, so that these several folds

may, when compressed, be like so many wedges. After compression has been thoroughly made, the ends of these folds should be sufficiently prominent to require the use of the file to level the plug to the surface of the tooth.

Those cavities circling under the free edge of the gum, require a little different treatment. That portion of the cavity under the gum has not the same depth as that surrounded by the enamel, and is slightly beveled, as already described, so that the inner end of the first fold or the first block of gold, should be well wedged under the beveled wall.

This portion of the cavity should be first filled, because covered by the gum, and the pressure of the gold is necessary to keep the gum out of the way. If the cavity is large, I prefer the use of blocks for these fillings, and if small, I use the strips as already described, forcing the first fold under that portion of the wall of the cavity formed beneath the gum, and if the cavity is large, placing my first block in the same place, and finishing at that portion of the cavity where the border is surrounded by healthy enamel. We have here a cavity so formed that when the gold is well compacted, the filling cannot be dragged or worn out by the use of the brush, and the bone cannot well soften around the plug; at least this cannot well take place, unless the gum is absorbed so as to expose the bone above on the neck of the teeth. The shape of the outer surface of the plug should correspond with the shape of the tooth, and should be trimmed around the margin of the cavity under the gum, so that no projecting portions of the gold shall irritate the gum. If this should be the case, the same condition of the gum will soon be manifest as that caused by the presence of salivary calculi.

Small fissures are sometimes observed running across the superior incisors, apparently the result of an ill formation of the tooth itself, but which has been enlarged by a decomposition of the tooth substance. These should be excavated to suit the shape of the fissure, preserving the appearance of the tooth as well as possible, and then commencing at one end of the cavity, fill up so as to restore the shape of the tooth, and prevent fur-

ther decay. The taste and judgment of the operator must decide the form of cavity most suitable to preserve the beauty of these important organs, so conspicuous in the mouth. Decay is sometimes found at the neck of the inferior incisors, canine and bicuspids; yet a further description of labial cavities is now unnecessary.

The next cavities in regular order, according to classification, are the approximal, yet, in their importance and frequency, they might well be placed first on the list. I presume that they embrace far more in number than all the rest, and that no location of cavity so much baffles a majority of operators. How frequently do we meet with young operators who succeed tolerably well in the central and some of the labial fillings, and yet scarce ever succeed in those now under consideration, and if so at all, only in those most favorably situated for filling.

There are quite a number of circumstances and physical peculiarities of the teeth to be taken into consideration, before we can treat of this operation as we ought. These cavities are located on the approximal surfaces of the teeth. The age of the patient, the nature of the decay, the extent of disease, the tooth or teeth to be filled, and the means to be used so that the cavity can be made accessible and the teeth filled. Shall they be separated by wedging or by filing? I think we shall find that these several circumstances will and should exert a due influence on the mode of operating. In our description, we take the teeth as we find them, decayed on their approximal surface, and we are to determine whether they can be saved by filling, and how this is to be best done. We find all the teeth subject to decay in this location, true, some but seldom, others very often; the superior incisors and bicuspids more frequently; the incisors and canine inferior less frequently; yet all are subject to this location of disease.

The age of the patient must have an influence in directing us in the first steps necessary to perform this operation aright.

The question might be asked, at what period of life are we most frequently called upon to fill the inferior incisors? The answer to this question would depend very much on the over-

sight of the parent, and whether children are brought in to have these teeth plugged when they should be. I am satisfied that in a majority of cases when these teeth decay on their approximal surface, that the disease commences before the twelfth year, or by that period of life we may expect the second molars to make their appearance. These remarks are made because it is thought that in early life they should be separated by wedging, and at this time they can be thus separated with less injury than in after life. What are the conditions which would demand the use of wedges instead of the file? If the decay has progressed so that the edges of the enamel have become brittle, the file is certainly indicated; and if, when this has been used, the space obtained is sufficient for the proper introduction of the gold, wedging is not necessary. If the teeth are much decayed and overlapping each other, and the use of the file would relieve the deformity, it is certainly indicated; but if, when this has been used so that the object is accomplished, and the enamel around the border of the decay is firm and solid, and the space is not sufficient, the use of the wedge is indicated.

If the decay is small, not deep-seated, and has not injured the appearance of the teeth, wedging is certainly admissible, and most particularly so, if the use of the file would cut away a portion of the border of the cavity necessary for the retention of the plug.

If the teeth are small at their necks, and only pressing against each other at their points, and these sound, with small decay, the wedge is indicated. I have thought that this particular condition of things was more favorable for the use of the wedge than any other. Such teeth, when filed, generally approximate and bring their filed surfaces together, because a shoulder is not admissible at their necks, so that they can be kept apart. Such teeth, when much filed, are often much disfigured, from the fact, that two approximating, some of the spaces are much widened. Take, for illustration, the central incisors pressing together at their points, the lateral incisors more disposed to rest against the canine teeth. The approxi-

mal surfaces are all decayed, and spaces are made with the file for filling. We will find the central incisors soon again pressing at their points; increasing the space between these and the lateral, about equal to the space made between the central, and if the lateral should still tend toward the canine, a still greater deformity will be created, the extent depending upon the space made between these and the canine. This condition of things, then, indicates very strongly the propriety of wedges. and I should not stop to know if my patient was fourteen or forty.

We will find such teeth very easily pressed apart—the alveolus not embracing so much of the root of these teeth as is the case in teeth of short crowns and thick necks.

What kind of wedges shall we use? This I think not really essential. The object is the separation of the teeth, and the requisite force can be applied by any of the three usual methods, and with care can be effected with safety by either. The gum elastic, it is true, unless judiciously applied, may exert the force too rapidly. The same thing, however, may be effected by the use of wood or cotton. The latter articles, however, I usually employ, because less unseemly between the teeth. If the carious portion is very sensitive, and I wish to destroy this sensibility, I use cotton, having upon it tannin and collodion, or creosote and extract of galls. The former I have of late found the most to be depended on. The collodion being soon evaporated, the cotton is left in a somewhat hardened ball, and not easily displaced.

My attention was first drawn to the use of the cotton for wedging the teeth apart, by a case I had in Port Gibson, Miss., some ten years since. Mrs. T., aged about thirty-five, had extensive decay on the posterior approximal surface of the second bicuspid, left side superior. The tooth had been filled, and the plug recently picked out. The tooth bone was exceedingly sensitive, and to allay this I applied daily, for a few days, a preparation of nut-galls with creosote on cotton. The space between the teeth was so small that I had to force the teeth slightly apart to get in my cotton with the preparation named.

I found the space widening daily, and by the time the tooth was ready to fill, the space was abundant to enable me to fill without the use of the file. When the object is a separation of the teeth, and no application to the decay is desired, I generally take soft wood, (pine,) and after introducing the first wedge, leave the balance to my patient, directing a renewal every morning and evening, until the requisite space is obtained; not letting the pressure be enough at any time to produce much soreness in the teeth. This will accomplish the object in from two to four or six days.

I avoid the use of arsenic in acute sensibility of tooth bone, unless I am absolutely driven to it, and this is very seldom; but above all other means, I far prefer the rapid use of a very sharp excavator. This is at once forced through the decay, when with two or three sudden revolutions around the cavity, the decay is mostly cut loose from the bone, and its sensibility in great measure paralysed. After this, time can be taken to complete the cavity as desired. There are but very few patients, of even twelve years of age, but what I ultimately get to submit to this operation. When such will not submit, and the other remedies fail, I would then apply the arsenic, as directed by Dr. Harris, but not leave it in over two hours; the decayed portion should then be removed, and the cavity washed out with the hydrated peroxyd of iron. This being an antidote to the arsenic, will arrest its further action.

It unfortunately so happens that the very class of teeth in which this article might be supposed to exert the most pernicious influence, are those in which it appears to be most demanded. And these are those teeth, apparently possessing a greater degree of vascularity than is usual, so that the sensibility of the tooth bone is greater than is ordinarily met with. And I suppose that as is the vascularity of the dentine, so is the danger of reaching the pulp by the action of this remedy. The question, then, as I take it, assumes this character: Shall we let the tooth alone to be lost by the disease with which it is affected, or shall we attempt its preservation by the use of this remedy, and if the nerve should be destroyed, fill as if this had been done intentionally.

Although generally succeeding in the allaying of the extreme sensibility of these teeth, which are most frequently met with in youth, by those remedies first suggested, yet I must confess that they are not as prompt and certain in their action as is desirable, and the arsenic is too much so; taking the other extreme, various preparations I know have been recommended, such as sulph. ether and chloroform; the latter with benzoin, and various other remedies of the like nature. Yet to avoid pain in the removal of caries in the teeth of our young patients is of doubtful practicability. But I have digressed here farther than I intended, having reserved this subject for after consideration.

In the further consideration of this subject, we shall first take up the preparation of the cavities under consideration in the superior incisors and canine. And first, let us take a view as it were of the approximal surface of these teeth, so that we may have a proper idea of the form which the cavity will necessarily assume, particularly if the decay is at all extensive, and the separation of the teeth will demand the use of a file. In a majority of cases where the separation is effected by wedging, the cavities can be made round, or nearly so. But when the decay is extensive, commencing near the gum and extending to near the point of the tooth, we shall have a shape of cavity somewhat resembling the side view of the tooth itself. We have here wedged shape teeth, the palatal plane, however, far more beveling than the labial. The cavity, then, must often assume this shape; having its base next the gum, and the cone corresponding to the point of the tooth. The manner of separation will affect also the interior arrangement of the cavity. If, for instance, the teeth have been separated with the file, and the palatal portion most cut away to preserve the labial appearance of the teeth, we shall have a depth of cavity on the palatal, not at all equal to that on the labial line of the tooth.

This condition of things is generally that which is most desirable, so as to most effectually preserve the appearance of the tooth, and hide from view the filling.

The decay sometimes, however, approaches more the labial portion of the tooth. Then this condition of cavity may be somewhat reversed; and although the tooth may be well filled, yet the plug will be more exposed to view. The palatal border of these cavities do not always present a straight line, but generally the reverse, curving inward somewhat to the center of the decay.

The internal arrangement of these cavities I aim to get of the following order: The labial and palatal wall straight, merely carrying in as it were the breadth of the cavity at the orifice, but the base of the cavity next the gum, slightly enlarging as it extends in toward the center of the tooth. The point under the cutting edge of the tooth should also take somewhat this shape. In this way all the healthy bone which can *be*, should be left to give strength to the labial and palatal border or wall of the cavity, and this is especially necessary, as the palatal wall, if left thin, is apt to crumble away, and the labial may do the same, or reflect too much the gold filling.

It sometimes is necessary, however, to cut away from these points all the dentine, as this may have become discolored from disease. This enlargement of the cavity at the cutting edge and neck of the tooth, should not be of the character of a distinct neck, but merely such as to make a gradual widening of the cavity from these two points; so that the filling shall be held additionally secure. Scarce a tooth do we meet with which can be filled at all, but will bear this form of cavity; and in superficial or shallow cavities, it is that form most easily and securely filled. The remarks already made in relation to approximal cavities, are alike applicable to the incisors and canine superior and inferior. We come now to speak of those in the superior bicuspids. Here we have a different shape of tooth, and yet, as in almost all cases when the decay is small, the cavity is or may be easily made round. Here, however, wedges are not so much resorted to, and yet their use is often advantageous. I have of late years used them in all such cases as when the file would destroy the cavity. When these teeth have been filed and filled, the fillings are not doing well, or have

dropped out, and the teeth are again pressing on each other. Such teeth I generally wedge apart—then shape my cavity and trim the border with a file to suit the condition of the teeth, so that two plugs may not press together, but allow the enamel portion on the labial face of the teeth to come in contact. Floss silk, or some such substance, should be daily forced between such teeth.

In separating these teeth where these conditions do not exist, I generally use the cutting instrument and the file. But let me here state one condition of things which we very often meet with in these teeth. We first have a crowded condition, then we have both bicuspids decayed on both approximal surfaces, and also decay on the anterior approximal surface of the first molar—the posterior bicuspids much decayed, and our patient sixteen. In my opinion, the best instrument to make space here is the forceps. One good space here is better than two, for this will be in a short time much diminished, and the annoyance to the patient in mastication, is far less than two filed spaces. This advice is made, of course, taking it for granted, that the molar and first bicuspid can be preserved.

Let us, however, prepare these teeth for filling without this operation. If the decay is advanced so far that the enamel has commenced to crumble in, I first take my cutting instrument, cut away that portion which is frail, and hides from view the cavity. This is done generally, cutting most toward the palatal portion of the tooth, preserving as much as possible the labial face of the tooth—the cavity is thus exposed—the depth of decay ascertained, and then with a knife-edged file the space is finished. This space, when completed, resembles somewhat the letter V, with its base toward the cutting point of the teeth; when admissible, a shoulder is left at the neck of the tooth. The space on the palatal line of these teeth is much wider than on the labial, when the decay is extensive, and the enamel frail, beveling from near the palatal prominence. This gives fine access to the cavity, and enables me to overcome a difficulty occasioned by an anatomical construction of the tooth, which is this: The fissure or suture running from approximal

surface to approximal, as it approaches either surface, dips deep into the tooth; the center of this suture being elevated by the labial and palatal prominences uniting. This form of tooth when the decay penetrates from the approximal surface of the tooth beneath this depression, and decomposes the bone to the enamel, weakens so much this exposed wall of the cavity, that it is constantly liable to be broken. The decay, following here the line of enamel, forms a shape of cavity any other than desirable for the retention of a plug. I prefer, therefore, at once to cut away the enamel to this depression, beveling in toward the palatal prominence, and up to the shoulder at the neck of the tooth. It also bevels toward the labial corner of the tooth, leaving the face of the tooth as perfect as the solidity of the enamel will allow. We have here a space giving us the most easy access to the cavity, and more easily kept clean with the tongue than any other.

The decay following the line marked out by the bone of the tooth, forms a circular cavity extending from under the labial to the palatal prominence, and the continuation of this circle interrupted by the depression on the cutting surface of the tooth. The depth of the cavity under the cutting surface of the tooth will necessarily be shallow, yet we will be enabled to cut under the enamel so as to get a good hold for the plug. The circle of the cavity first named can be so formed as to maintain the size of the cavity at its orifice, or, if desired, slightly enlarged, as described in my description of those in the central incisors. This shape of cavity at the neck of the tooth, I consider desirable in all approximal cavities; it holds in place the first blocks or fold of foil far better than any other, because the pressure made in compacting the gold is more on a direct line with the wall of cavity thus formed.

The space between the molars will, to a great extent, be the same as that already described, only the same care is not necessary to preserve the labial face of the tooth. If this decay is correspondingly large with that in the bicuspids, the space may also be wider, and as we advance back in the mouth, this will be needed, so that the cavity may be perfectly accessible.

Unless the decay dips beneath the margin of the gum at the neck of the tooth, the shoulder will be more distinct, and even when this is the case, the filling may be filed and trimmed to give the shoulder, almost as if the cavity did not pass under the gum. Without a good space and thorough work in the filling of these cavities, a difficulty so often complained of will be the almost certain result, and this is pain in picking the teeth. What occasions this pain? Is it, as is often said, an irritable periosteum, which has become exposed by the recession of the gum? I think this would not often give such acute pain as is complained of by the touch of the pick. Is it an exposure of the bone at the neck of the teeth, and which is firm and solid, and yet so sensitive? I think that this is not often the case.

This sensitive condition often comes on weeks or months after the tooth has been filled, and I think that it will more often be found to be the result of an imperfect removal of the diseased bone at the neck of the tooth, or the foil has not here been well compacted, so that moisture and air gets in and the bone beneath the filling becomos tender from disease. This I have frequently observed, and the refilling of the tooth relieved the difficulty. Very often have I found the space so small when this difficulty existed, that it was utterly impossible for any man to do justice to the operation. A narrow space between the molars will always be annoying and troublesome to the patient, while a very free opening is of but little if any inconvenience.

Some of the most difficult approximal cavities to fill are those on the anterior surface of the posterior molars, the anterior molar standing a little more prominent, and the posterior pressed against this by the dens sapientiæ. The cavity with an ordinary space is generally much hid from view, and that portion with its wall formed by the grinding surface of the tooth, completely so; so that the direction of force requisite to fill this portion of the cavity must be from the neck of the tooth; yet the pressure is most apt to be made just the reverse. I hope it will be borne in mind that I am pointing out difficulties not to the old and experienced operator. He has overcome them, but

these are difficulties which every young operator will meet with and the only way to overcome them is to take a firm stand, and so make your space as to have complete access to every portion of the cavity with your plugging instruments. The objections and foolish prejudices of the patient must not be heeded. Unless you can operate according to your own plan, you had better not operate at all.

In the larger class of approximal cavities, the drill will be found almost a useless instrument; the excavators alone being those we shall have to depend on to remove the decay and form the cavity; and these should be kept in most perfect order, having always on hand every form and variety which may be needed. For the formation of the cavity at the neck of the tooth, I like a simple curved excavator, flattened at the point with the curve of the instrument; the cutting edge of the instrument about as much beveled as I wish the wall of this part of the cavity to be; it may also be nearly as wide as the cavity is deep. The longest angle on the cutting edge of the instrument will be placed within the cavity, and by two or three cuts, circling with the neck of the tooth, mark out the depth you wish this wall of the cavity. These first cuts will line off the cavity so as not to expose the nerve by the future part of the operation; this instrument is then used in the same manner, until the shortest angle of the cutting edge trims away the entire decay from the border of the cavity.

These instruments will have to be in pairs, and made of different sizes, to correspond with the depth of decay. These instruments, with a variety bent at right angles with the bar of the instrument, some flattened so that their cutting edges shall be on a line with the bar, and others the reverse, will constitute those most used in the formation of these cavities.

In the smaller class of approximal cavities, the drill may be used, more, however, to give form to the cavity, than for the removal of the carious portion.

In approximal cavities, when space has been obtained by the removal of a tooth, the cutting instrument and file may not be necessary, unless, indeed, the border of the cavity is frail, or

the enamel which covers the decay has not been broken in. If this should be the case, they will have to be used, but not to the same extent as where a tooth has not been removed. The border of the cavity should, however, always be firm and solid, not crumbling and breaking in under the pressure necessary for the consolidation of the gold.

A separate description of the preparation of approximal cavities in the inferior teeth, scarce requires any other description than that already given of the superior. The spaces to be made are the same between the molars, and but little difference between the bicuspids, except, indeed, not as a general rule, cutting so much from the palatal portion of these teeth.

When we come to the incisors, however, the same amount of filing is not admissible. The teeth are smaller, the cavities cannot penetrate very deep into the teeth, and much of the tooth removed from any cause would preclude the operation of filling without an exposure and destruction of the nerve. We find here, I think, the decay more frequently presenting to the labial face of the teeth. This enables us to fill frequently without any separation. When, however, much space is desirable, these teeth can be easily separated by wedging.

We come now to speak of the introduction of the foil in the filling of these cavities, and we take first the cavities in the inferior incisors. I stand at the right side and facing my patient, turning the face either to or from me, as the cavity may be in the approximal surface of the tooth nearest to, or farthest from me. If, for instance, it is the central left incisor, the cavity on the anterior approximal surface, the patient's face is slightly turned from me; a napkin folded over the tongue, and its folded corner brought around in front of the tooth, and is made to cover the gum and mucous membrane of the lip, which however, if possible, should be turned inward, and so held by the napkin, which is held in place by the forefinger of the left hand, with the thumb retaining the napkin in place over the tongue, and grasping the palatal surface of the tooth. The arm is thus thrown over or around the patient's head, and the three remaining fingers placed under the chin. The patient's head, chin, tongue and lip are now under my control.

The foil has been prepared by folding it from four to eight thicknesses, and cutting into a strip more than is sufficient to fill the cavity, but not as wide as the mouth of the cavity itself; a block is then folded on the end of this strip, as large as can well be placed endways in the cavity. The cavity being dried, this block or roll is with care adjusted and firmly compacted in that portion of the cavity nearest the gum. This block I introduce with my plugging forceps, and then take up a suitably curved and sharp pointed plugger, and with this, fold after fold of the strip is introduced. If the cavity is large, or large for one located in these teeth, I sometimes first introduce some two or three of these blocks, and then finish with a few folds of the gold. In the compacting and consolidation of the gold, the tooth is grasped firmly with the forefinger and thumb; a resisting force is thus applied to the tooth, and we are thus enabled to make the requisite pressure to consolidate the gold without injury to the tooth. After the last fold of gold has been well secured, I take my pointed plugger and pass it around the border of the cavity, compressing every point of the gold as I advance, and thus continue passing round, and each time nearing the center of the plug, until I have thus made pressure over the entire surface of the gold. I then take a flattened instrument, (and if the space is sufficiently large,) this is cut on its surface rough like a file, and with this make as much pressure as the size of the plug demands. The surface of the gold is then filed down and made level with the margin of the cavity. In this operation, I should always expect the solidity of the gold to be such by the time the last fold of gold was forced in, so that in passing my plugging instrument over the filling there will be more gold protruding than is possible to be forced into the cavity. This description will answer for the anterior approximal cavities in the inferior incisors and canine of the left side, and the posterior approximal of those of the right side. The insertion of the gold, indeed, in the other cavities of these teeth will be the same, but the manner of holding the tongue, lip, teeth, &c., will require a little explanation.

In the reverse cavities of these teeth, the patient's face is urned more toward me; the fold of the napkin is reversed, till keeping, however, the end next the lip. The forefinger of the left hand is placed on the napkin, over the tongue, pressing against the palatal face of the tooth, and sometimes the middle finger farther back on the tongue. The thumb is placed on the end of the napkin over the lip, and lays hold of the labial face of the tooth. This arrangement enables me to keep the tooth dry, and make counter pressure on the tooth when filling; and in adults, or with those who can maintain a fixed and firm position of the inferior maxillæ, the position and arrangement is a good one; but when support to the jaw appears to be more essential while introducing the gold, the forefinger may take the place of the thumb, the middle finger that of the forefinger, and the thumb thrown under the chin. After the foil has been introduced, the position of the left hand may be changed as desired, so as to most effectually aid in consolidating the plug. These teeth I generally fill from the outside. In irregularity of the teeth, an occasional exception occurs; the change of position, &c., must then be in accordance with the location of cavity, and for which I shall now give no special direction.

In the filling of the inferior bicuspids, I frequently use the napkin and left hand as above directed, especially when operating for young and unsteady patients, who cannot hold a firm jaw, and manage the speculum as I desire. I prefer, however, the use of the speculum when it is at all applicable, because I have the more free use of both hands in operating. Its application is much the same as in the filling of the central cavities of the inferior teeth, only the folds of the napkin should be more carefully held against the margin of the gum, and lying under the edge of the tongue opposite the tooth to be filled, and under the fold of the napkin a lock of cotton may be placed, to take up the saliva, and keep the cavity perfectly dry.

My position in the filling of these teeth, is to the right and in front of my patient, excepting in a few cases in the filling

of the posterior approximal cavities, when I take my stand rather behind my patient, on a platform ten inches high, made as wide as my chair, the base of which my chair and foot-stool stand upon. The patient's head is thrown slightly forward, or held on a line with the body. Those cases where I should take my stand behind my patient, would be when the posterior approximal surface of either bicuspids, and sometimes the molars, had not been beveled sufficient to expose the cavity to view when standing in front. In cases of this kind, the cavities are not large, and I should prepare my gold as described for the inferior incisors, and with my plugging forceps, which are bent at near right angles, but when closed, flattened the reverse at the point from that used in the introduction of my blocks in the central cavities. After the block or roll has been pressed to its place, I either take up a bent plugger, adapted to such cavities, or use my forceps; taking hold of the strip far enough from its connection with the block introduced, so that when folded, and the point I have hold of is drawn into the bottom of the cavity, the end of the fold projects. This method is very accurate, and answers admirably until the cavity is nearly filled, when the forceps will have to be closed and used as a common plugger, or such an one selected. The last instrument used in this part of the operation should be small and sharp at the point. The operation thus far advanced, a flattened instrument which can pass between the teeth should now be used to force in as much of the projecting foil as is possible, and then, before the appliances for keeping the tooth dry are removed, pass a sharp pointed plugger over the surface of the gold, compressing and feeling of every point. In the use of the compressing instrument, the tooth being filled should be grasped with the thumb and forefinger of the left hand. If care has been taken in the introduction of the gold in cavities of this size, no point on the filling will admit the point of the sharpest plugger, so as to require any addition of foil. In small cavities where this is the case, I prefer refilling at once.

In the larger class of cavities now under consideration, a different procedure is somewhat necessary. The cavity is

almost entirely filled with blocks, but as that portion of the cavity nearest the gum is deepest, owing to the beveling of the tooth, so the blocks used for this part should be the longest. We also find here the border of the cavity formed by the grinding surface of the tooth often depressed, so as necessarily to change the manner of introducing the gold. That portion of the cavity nearest the gum, however, should be first filled, and when the cavity has been filled to the depressed border, then that portion under the palatal prominence, and finish under the labial. This condition of things is, however, more observable in the superior bicuspids, yet often to be met with in the inferior bicuspids and molars. The folds of gold have been so carefully arranged in these blocks, that by proper care in their introduction, using considerable force in compacting as they are introduced, we shall have a solidity of gold hard to be procured in any other manner. I would here remark, that the shape of the cavity at the neck of the tooth, with its wall sloping inward, draws to the center of the cavities these blocks of gold. The pressure can then be made to the center of the tooth on an axis with its root, until we approach the last part of the operation in the introduction of the gold, when we come to wedge in, as it were, a few folds of foil under the wall of the cavity formed by the grinding surface of the tooth. Care should, however, be taken during the whole of the operation, to force into the bottom of the cavity the blocks of gold. In these large cavities, after I have made compression on the protruding ends of my blocks of gold, I examine carefully every point on the surface of the filling, and if a sharp pointed instrument can be introduced, it is done, and pressure made from this point to enlarge the opening; so that this becomes a cavity in shape to hold a plug, when a few folds of gold are introduced and compressed with the other.

When care has been taken in the introduction of the gold, and the border of the cavity has been sufficiently firm to resist the amount of pressure I usually make, I should not expect to make openings into the filling already introduced, for its more perfect consolidation. Yet, when the border of the cavity is

necessarily frail, such may be the case; the instrument then should be introduced, not too near the weak wall of the cavity, but leave as much gold between it and the instrument as can be made solid without breaking it in. A few folds of gold will be a great protection, and prevent an injury to the cavity which might be irremediable.

Generally, the molar teeth are sufficiently firm to resist an amount of pressure necessary to consolidate the gold. When this is not the case, they should be held with the left hand of the operator. The pressure necessary to consolidate a plug, will depend on the size of the plug and the regular arrangement of the folds of gold in the cavity

The instruments I use for consolidating the gold in these large cavities, are bent at near right angles; some flattened with the bar of the instrument, and some the reverse. They are large and strong; the surface deeply cut like a coarse file, and will bear any amount of pressure which can safely be made on the tooth. After I have used these until I find the gold is solid and firm, I take a file, (one, perhaps, which has been partially worn out separating these teeth,) and file away that portion of the gold protruding beyond the margin of the cavity; but before this has been completely effected, I take a blunt pointed plugger, and make pressure entirely around the edge of the plug. Then use the file until it strikes on the enamel around the filling. We will still often have along the edge of the plug, next the grinding surface of the teeth, a fullness of the plug, occasioned by the curving in of this border of the cavity, which is the result of the depression on the grinding surface of the teeth already described; here, then, we take a small file, the blade of which is short and flattened, the cutting surface slightly rounded, the blade is bent with the handle to an angle of almost forty-five degrees; with this we bevel away the gold to correspond with this curved line of the border of the cavity. I would not be thus particular in this description, but these files are lately introduced, and are invaluable in cutting away the surplus gold of a plug.—*Dental Register.*

[To be continued.]

ARTICLE VIII.

Treatment of Dental Pulp preparatory to Plugging. By J. D. White, Dentist.

Arsenious acid *is*, undoubtedly, the *destroying agent* in every form in which it can be used. A great many dentists are now using it, combined with morphia, and with success. I cannot understand why the preparations of morphia will not obtund, to some extent, sensibility in the pulp of a tooth. They are applied, with that view, to other parts of the body,* and not without good effect. I know well that the sulphate of morphia alone will suspend pain in the pulp, when it only arises from inflammation of that substance. I employ it constantly for that purpose, and sometimes combined with tannic acid; and always succeed in stopping the pain, even though it has been occasioned by the application of arsenious acid alone, if the external membranes are not much involved.

Arsenious Acid, Morphia and Kreosote.—This is, perhaps, the best form of using arsenic that has yet been devised. I have not seen it spoken of by any authors. I have been using it thus since 1840, as a general substance for destroying the pulp, but I have tried arsenic in various other forms, as well as many other substances, before and since that period. There is no difference, in this form, in the rapidity with which it unites with the pulp, than when the kreosote only is properly combined with it; but the morphia will exert its narcotic influence, and lessen the pain; an effect which we do not often obtain with kreosote. The kreosote cannot be regarded in any other light than as a mere vehicle for the proper application of the arsenic.

℞ Arsenious acid, . . gr. xxx.
Morphia sulphas, . gr. xx.
Kreosote, q. s.
Misce.

* "They are applicable to all cases where the object is to relieve pain, or allay nervous irritation in any shape."—*U. S. Dispensatory.*

Put the arsenious acid and kreosote in a glazed mortar, and grind until the arsenic becomes impalpable; then add the sulph. of morphia, and continue the trituration for some time, with a view of completely incorporating both ingredients, and adding a little kreosote to keep the mass of about the consistency of thick cream. Prepared in this way, the arsenic is in a better condition to unite speedily with the pulp than the mere dry powder of arsenic, on account of the kreosote holding a large quantity of it in solution; and it becomes more minutely subdivided when triturated in an oily substance, than in the dry state.

Manner of Applying the Paste.—In the application of this paste, or in fact of any substance for the treatment of the pulp, great care should be taken to free the cavity of decay of all foreign substances, as well as the decay immediately over the pulp cavity, so as to be able to place the paste in immediate contact with the exposed pulp. This precaution should never be neglected; because, if the pulp is inflamed at the time the application is made, the simple removal of the decay will excite bleeding, and relieve, or wholly stop, the pain; indeed, it is very frequently that nothing more is required to cure a bad attack of tooth-ache. And again: if it be not inflamed at the time, the action of the destroying agent will excite the determination of blood to the pulp, and by being thus congested in a shut cavity, and incapable of expanding or bleeding, will produce great pain, wholly independent of the escharotic agent; whilst, on the other hand, the patient would only experience a gnawing sensation, or dumb pain. A pledget of cotton, about the size of a small pin's head, steeped in the paste, is sufficient. If the pulp bleed when the cavity is cleansed, we must wait until the bleeding subsides before we apply it, as it would dilute the preparation and diminish its action. The cavity may then be filled with cotton, and left to remain in from ten to sixteen hours. If it be in the case of a young patient, the bone will absorb a sufficient quantity of the arsenic to inflame the alveolo-dental membrane; and of course it should be removed, in such cases, in a shorter time than it could be left with safety in the case of an older patient, or a dense and opaque tooth.

I sometimes place a layer of tin foil over the paste after it is ntroduced, with a view of preventing it from being absorbed by the cotton, especially if it be between two teeth, both of which are decayed, and it is not desirable to destroy the pulp in both. We have seen cases where substances have been placed in one tooth to destroy the pulp, while the adjacent tooth was not decayed to the nerve; and the cotton absorbing the poison, it would pass over to the adjacent tooth, and permeate the thin stratum of bone protecting the pulp, and either inflame or destroy it, and give both patient and operator great trouble.

Softened beeswax and pastes of various kinds are objectionable, because they will not allow the air to escape from the cavity while packing them in, and therefore, by forcing a column of air against the pulp, it induces pain. Where the cavity cannot be sufficiently well shaped to allow of the secure package of the cotton, or where there is no adjacent tooth to support it, as on the labial surfaces of the teeth, for instance, I am in the habit of placing a roll of cotton over the cavity, and then throwing a ligature around the tooth to secure it.

An escharotic ought never to be applied in the after part of the day, or at night, to destroy the dental pulp, and especially in patients of a high nervo-sanguine temperament; because teeth are more liable to pain at night, from the increase of the nervous susceptibilities, and the febrile exacerbation and determination of blood to the head and face, that all are more or less liable to as night approaches. I very frequently narcotise the pulp, by applying morphia for a day or two before the application of the paste, if we fear its giving pain, and apply the escharotic in the morning. By this method, the most happy results have been produced in the treatment of the most nervous patients. Some of the reasons why I prefer using the arsenious paste are, 1st. It destroys the vitality of the pulp in a shorter time, and with less severe pain, than in any other form in which I have used it. 2d. It less frequently causes inflammation of the external membranes than when applied alone, from the well known principle, that the more speedily it unites with

and produces the death of a part, the less extensively will it b absorbed: and, 3d. It produces a more extensive and perfec slough of the pulp, and of course favors its removal more effec tually from the roots without pain. It is upon this latter effec that the preservation of the tooth mainly depends; and it woul seem that dentists have pretty generally overlooked this neces sity, under a false idea that the tooth is thereby rendered inevi tably a foreign body, and consequently becomes itself a caus of exciting inflammation. I consider the actual cautery a preferable for removing the pulp, where it can be applied, t the use of acids, and often use it in treating the pulp, prepara tory to setting pivot teeth.

Manner of Removing the Pulp.—After the paste has been i the allotted time, see the patient, and remove it. Then, with a small pointed instrument, wound the pulp to excite bleeding, to relieve the tension of the blood-vessels of the apex of the fang, and prevent the pain that would otherwise be produced by enlarging the orifice leading from the cavity of decay to the pulp cavity. Now open the orifice of the internal cavity well, quite as large as the largest part of the pulp cavity; then, with an annealed wire fitted into an ordinary drill-stock for the pur pose, and bent to suit, and *barbed* with a sharp knife, so that when it is passed into the canal alongside of the pulp, this sharp, jagged instrument will lay hold of the mass of the pulp, and with a sudden jerk, very probably, the whole pulp will be extracted, or at least it will break off at the line of demarca tion between the living and dead parts. If this barbed instru ment be as pointed as possible, it will pierce the pulp, or pass along the canal to any desirable extent, without pushing the pulp, or the contents of the canal of the root, before it; and again, if the sharp teeth lay backwards, or towards the shaft of the instrument, they will not produce much obstruction in en tering, but on withdrawing the instrument, they will inevitably bring with it the contents of the canal or cavity. If this in strument be filed to a flat square, and the edges barbed, they will be sharper than if the teeth were cut on a round or flat surface. To pass deep into the root through a winding cavity,

where a steel instrument cannot well be used, a common quill, of hard texture, prepared like the steel instrument, will be useful, as it is more flexible. We use the quill entirely for mopping out the root, in washing away the blood, and putting any substance deep into the root. I do not often apply the paste a second time, especially if the pulp is destroyed to a considerable extent by the first application, but apply a small quantity of *caustic potash* or *chloride of zinc*, as either of those substances will produce a speedy slough, in this condition of the pulp, without pain, whilst if either be applied to the pulp in a healthy state, they will excite intense pain, and not destroy the pulp for any depth. I also use *burnt alum*, *tannic acid*, or *nitrate of silver*, in solution, or in the stick, as the circumstances of the case and the locality of the tooth would allow; as, for instance, it would be improper to use nitrate of silver in a front tooth, as it would, without great care, discolor it. Sometimes, if all the pulp cannot be taken away, by waiting a few days, the balance will slough, and it can be removed with facility. It is yet a question with me, whether the pulp should be removed to the very apex of the root, or only within a short distance of it. We know well that the only evil of removing the pulp is the wounding or communicating inflammation to the external membranes, and it seems to me that if we remove the pulp to the end of the root, and there is any irritability in the constitution against us, it must act upon the external membranes at once; and that approaching so close to the apex, we cannot avoid exciting some irritation, whilst, if we leave a small portion of the blood-vessels remain, say an eighth or quarter of an inch, as the canal in the root is wide or narrow, as a kind of neutral ground to work on, in this way we would not be coming close enough to the external membranes to produce irritation, and there would not be sufficient of the fragments remaining to do harm. Neither do I see why we could not get rid of so small an amount by absorption, as the external membranes could do without it, in the same way that we get rid of the small shreds of blood-vessels elsewhere under similar circumstances. Although, in removing several nerves in the same mouth, I have had trouble

with those that have been partially removed, and not with those that had been entirely, and vice versa, still I give the preference to leaving some neutral ground. Yet I do not leave sufficient to invite an afflux of blood to the parts, or any part that can be taken away with the smallest flexible probe.

Plugging the Canal of the Root or Nerve Cavity.—I do not think it prudent to plug the root as soon as the nerve is removed, on account of the bleeding that generally follows, even though there be no bleeding; because it is evident that the blood that returned through the pulp must now return by anastomosing vessels, and which will give more or less turgescence to the blood-vessels of the root, and become augmented by the pressure of plugging. It is therefore important to wait for several days, as the case may be; in the meantime, see the patient, in order to remove the clot of blood that forms in the cavity until the bleeding ceases; and then, at last, fill the whole root with a tent of cotton imbued with alum-water, for a day or two, upon the withdrawal of which, if there be no bleeding, the root may be filled with gold. I *never* use tin in the root of a tooth: some I fill in three days, and some in two weeks, depending upon the condition of the external membranes. I take a piece of gold leaf, cut it triangular, (No. 6 will do, but 15 is better, and beginning at one corner, roll it into a pointed roll, and as hard as possible; this will make a flexible gold wire, which can be passed, if necessary, to the apex of the root. If it be too pointed or sharp, cut it off with the scissors at such point as to be thick enough to choke the cavity before it gets to the fragments of remaining blood-vessels, or going through the foramen at the apex of the root, for it would, in either case, bring on inflammation. Then follow this with a small annealed plugger, having a great number to fit different localities, of higher or lower temper, as may be desired, the larger ones to go far into the root, to be fitted extemporaneously, and used until a harder and stronger one will apply, making still greater and greater pressure as we near the neck of the tooth, when a very strong instrument must be used, as the plug at this point must be very hard, to prevent the tooth

from becoming discolored, it ought to be hard to the end of the root; but I know of no way of getting an instrument in, strong enough to make it very hard in some cases. Now the first of these pluggers must be rather soft; still, not as soft as steel can be, and rubbed with a burnisher towards their points, as that process will lay a kind of burr towards the points, and when used will carry the gold in, and not withdraw it on removing the instrument. It will also harden those sufficiently that are to be used first, without plunging them into water. When the root of the tooth is filled level with the floor of the cavity of decay, I am in the habit of burnishing the surface of the plug, to shut off the possibility of dampness escaping into the external plug. It is obvious that if the natural cavity of the tooth be firmly plugged with gold, the tooth will be in a better state of preservation than if the cavity be open or plugged with any other substance, as it will effectually prevent the dampness, pus, air, &c., from acting on the walls of the cavity. I need not say what nastiness gets into that cavity, as once cleaning it out when the tooth is in a diseased condition will explain it much better than I can. Again, as the tubuli of the body of the tooth radiate from the pulp cavity to its periphery, an impervious plug will shut off the discoloration so much complained of when the pulp is destroyed, as all that so much dreaded "blueness," "purple," &c., is from infiltration of the tooth by the contents of the pulp cavity. In this way, the whole body and root is saturated by the morbid fluids bathing that cavity, until the whole tooth is dead. I never think of a tooth becoming discolored, if my patient will give it as much attention as I propose to give. It therefore never happens, except by carelessness on my part, my patients', or imperfect operations.

I copy the following from my Thesis paper, written in the winter of 1843–44. It may not be uninteresting to give a list of cases which I kept during April and May of 1842. In one hundred successive cases, the pulps were destroyed in eighty-four without pain; the remaining number, sixteen, gave pain, the average duration of which was one hour. The pain was

most severe, and of greatest duration, in patients of a strong nervo-sanguine temperament; but even in those cases, if the pulp had been subject to frequent attacks of inflammation, it rarely gave pain when the paste was applied. Again, patients of scrofulous diathesis rarely suffered pain, whether the pulp had been previously subject to inflammation or not. I have extracted six of the above one hundred cases since the spring of 1842, for alveolar abscess, (time about twenty-two months,) but I was not able to trace the whole number any further, to obtain the ratio. Some, however, are still good, (1850,) and those that have been lost had not been well plugged in the roots. I never could succeed in saving teeth satisfactorily by plugging over the nerves, either by "caps," made according to special patterns, or methods of plugging, or interposition of non-conductors or non-irritating substances, such as *asbestos*, *charcoal*, *cotton*, &c. &c. I have kept a diary of cases, which will be useful to refer to, as well for my own practice as for others. The last special list was kept during October and November, 1849, of seventy cases that had been plugged over the nerves, and numbers of them by some of the most careful operators in Philadelphia, as well as in neighboring cities; none of them have been extracted up to this time, after filling in the roots, to my knowledge. Nearly all of those cases were giving pain at the time, and some of them had gone on to alveolar abscess, and were in a very unhealthy state. But this would lead to the consideration of alveolar abscess, which was not contemplated in the limits of these papers, but which, if time can be spared, and health permit, I will take up at some future period. I cannot close without acknowledging myself under the deepest sense of gratitude to the proprietors of the "Dental News Letter," and those other valuable journals that have done me the honor of publishing the above hastily written papers. Though hastily written, they are not hasty conclusions, as I have given them the most deliberate reflection and experiment, and their strict observance lead me daily to the most happy results. My humble exertions have been, and ever shall be, to arrive at the best and most truthful methods

of alleviating human suffering, and I would earnestly and respectfully solicit every fellow-laborer in our useful avocation, to aid in the elucidation of this intricate subject. He who corrects most of my errors, and teaches me most, does me more service and honor than he who adopts and applauds the result of my labors.—*Dent. News Letter.*

ARTICLE IX.

Mechanical Dentistry. By T. L. Buckingham, D. D. S., Philadelphia.

[Continued.]

After punching, cut the lining off the proper length and place it on the tooth. When all the linings have been punched and cut off, they should be filed to the shape required.

Some operators make the linings round on top, some square, and some oval on the outer surface; but, let the shape be what it may, they should all be of a length, and present an uniform appearance. When all are arranged they should be taken off, commencing at one end, and laying them in a row with the side up that goes next to the tooth; then put some borax on each lining, and also on the pins of the teeth; then replace the linings on the teeth, and with a sharp graver split each pin and wedge apart so as to bind the lining close to the tooth. The reason for placing borax between the linings and teeth, is, to aid in flowing the solder through the holes to the backs of the teeth. I have often found that when there was no borax there, the solder would only flow over the ends of the pins, and when I filed the solder off, the lining could be easily drawn off the tooth.

When the linings have all been fastened in this way, we may proceed to solder the whole case at once; but as it is very hard to finish up a case, when the teeth have been soldered to the lining and the lining to the plate all at one heat, I prefer to solder the lining to the tooth first. Remove the teeth from the

plaster and lay them on a piece of charcoal with the lining up, borax the lining and lay a small piece of solder on each pin and heat them up very gradually; blow a broad, gentle flame, and move the charcoal so as to make the flame play in a circle around the teeth without touching them at first; then gradually diminish the circle until the flame comes directly on the teeth; still keep the charcoal moving until they are at a full red heat, then let the flame rest a moment on each tooth and the solder will flow. Great care should be taken in heating teeth; it should be done with a broad, steady, gentle flame. If they are heated with very fierce puffs of the blow-pipe, or with a jet of the flame, they are almost sure to break, and it is very annoying to have a tooth break when the case is so near done. When they are soldered, they should be covered at once with a piece of charcoal hollowed out, to protect them from the air in cooling. Now file the linings smooth and put the teeth back in their places in the plaster, but be careful that no pieces of plaster get into their places. When they are all in their proper position, mix some plaster and cover the points of the teeth as far down as the linings, which will keep them from being drawn out of their places in soldering to the plate.

If there be any places where the linings do not fit close to the plate, the space should be filled with small pieces of gold. Then borax well the joints to be soldered, and lay two or three pieces of solder on each joint. The solder now used should melt more readily than that used in soldering on clasps or linings to the teeth. The case is now ready for the last soldering. Commence blowing on the outside of the plaster, and move the charcoal so as to heat the plaster evenly all around; when the plaster is red hot on the outside, then bring the flame in on the plate and keep it moving from side to side until it is of a red heat, then let the flame rest on each tooth until the solder flows.

In soldering, the heat should be applied very gradually and steadily. The habit of using the blow-pipe properly is soon acquired, if we do not hurry too much. The difficulty in most cases is, that we blow too hard at first, and the lungs become

exhausted before we are half through ; while, if we would blow gently, and when we found the lungs becoming exhausted, would stop and take an inspiration or two, we could get through without difficulty.

After the case is soldered, it should be let stand in the plaster until it is perfectly cold, for fear the cold air coming in contact with the teeth while hot, should break them. After being removed from the plaster, the case should be boiled out in some diluted sulphuric acid for a few minutes ; the teeth, however, being put in the acid before it is warmed. Where there is time to wait, let the case lay in the cold acid for thirty minutes ; this removes the borax and fire-coat from the plate. Then, with a graver or scraper and files, finish the case up as smooth as possible ; then with a strip of Scotch stone, stone all the file and other marks and scratches out of the plate, keeping it wet while stoning ; then wash all clean, and burnish with steel or blood-stone burnisher, using soap and water during the operation ; I prefer, however, to polish with a brush-wheel on a lathe, using sweet oil and tripoli or rotten stone ; then with a buff-wheel about the size of half a dollar, made of two or three thicknesses of hat-felt or thick buckskin, polish the plate all over where the buff will touch, and where it will not touch use a pointed stick covered with soft leather ; then brush it again with the brush-wheel, and wash clean with soap and water ; then with another buff-wheel made of soft buckskin on which use rouge, polish your plate well till you have a beautiful gloss ; wash off the rouge and dry the case with chamois leather or a soft napkin, or, what is better, cover the whole up in some dry saw dust for an hour or so, which will absorb the moisture without injuring the polish. The case is now ready for the mouth.—*Dental News Letter.*

ARTICLE X.

Atmospheric Pressure. By James Flemming, M. D., Harrisburg, Pa.

There are some difficulties which lie in the way of our proceeding for the insertion of entire substitutes upon the above principle, which appear to be quite overlooked. Some of these I consider of great importance; especially one, which I will first mention, and which lies at the foundation of the whole matter. It consists in the fact that a substance which is capable of taking a true impression of the gum, cannot be removed therefrom without more or less *distortion*, unless atmospheric pressure be taken off; or, in other words, the *vacuum* which has thus been created be destroyed. I have nowhere seen a plan proposed which was directly intended to obviate this difficulty. It is true that *plaster*, if it be good, and kept in the mouth a sufficient length of time, (a proceeding which is not very agreeable to the patient, to say the least of it,) will harden sufficiently to allow of its removal with but little if any *swagging*. But how can it be started, if it be perfectly *true*, without first moving it and altering its face sufficiently to take off at least a part of the pressure? For be it remembered that fifteen pounds to the square inch is no trifle to overcome; and if there is not a yielding somewhere, the effect upon the gum itself would be pretty severe. It is obvious that if the plate, which is to have the exact form of the impression, is to be sustained with any considerable degree of firmness, the impression itself will be even more firmly held, if there be no yielding anywhere. Indeed, I am persuaded that a *perfect* impression can never be had, without taking off, in some way, atmospheric pressure, so as to allow of its easy withdrawal.

I have, for five or six years, been in the habit of adopting a very simple plan for obviating the above difficulty. And I believe that any one who will once test its utility, will not again omit using some means of the kind for the purpose alluded to.

A few days ago I was trying a plate in a lady's mouth, which I had just prepared. After I had directed her to exhaust the air from under it, by suction, the effort which it took to remove it quite alarmed her, and she asked me, in all sincerity, "Is there any danger of its getting so fast in my mouth that I can't get it out?" This plate was prepared without an *air-chamber*. Of this, however, I shall hereafter speak.

To take the impression of the mouth, I consider *beeswax*, when well managed, the very best material that can be used. I have seen it stated that it will sometimes stick to the mouth. This, I apprehend, is a mistake. It should not, of course, be used too soft. And it is much better to warm it at a fire, or over a spirit lamp, than in hot water. As to its *sliding* over the mouth, the difficulty is very easily obviated. If firm and steady pressure be made *directly against the palatal arch*, the wax will receive the exact impression of that part of the mouth. Having selected a suitable wax-holder, (of which I have a variety, both in size and depth,) I place in it the wax, suitably prepared, and immediately perforate it through an opening previously made in the *holder* towards the center of the palatal arch, and place therein a *tube*, which is barely long enough to extend through, both ways. When the impression is being made, this tube will press downwards, and will leave a complete opening through the whole, for the admission of air, so that it can be removed without any difficulty and without distortion. Before doing so, however, it should be firmly held with one hand, while, with the other, pressure is gently made all round the margin. It should then be moved in a direction straight off from the gum, starting it first in front. The sides of the holder should always be high enough to guard the impression from injury, in withdrawal from the mouth.

Having thus obtained a perfect impression of the mouth, there is another fact which must not be lost sight of at this stage of the proceeding, in order to obtain a *true model* therefrom. Wax will contract in cooling; and as it will be of different thicknesses at different points, after the impression is made, so will the degrees of contraction be varied over its surface.

Hence, to prevent this effect, I make my *cast* at once, mixing the plaster with *tepid* water. In this way, I think there can be a nearer approach made to a perfect model of the mouth than can be obtained in any other way.

As to the contraction which takes place in the *metal castings* I think it is, perhaps, an advantage. The plate will be somewhat expanded by the heat of the mouth; but what is still more worthy of consideration, there is generally more or less absorption of the gum for a while after it has been inserted. And in this process, there is an adaptation of its surface to the face of the plate.

In *swaging* up the plate, great care should be taken to go no further than is necessary to bring it to the exact form of the model; as any *stretching* beyond this point will be certain to impair the fit.

Central and Lateral Air Chambers.—Although I have, until very recently, been quite in the habit of using these auxiliaries, as they are supposed to be, for the insertion of upper sets, yet I must say it was never without some misgivings as to the correctness of the principle. If a plate be perfectly fitted to the whole arch and ridge, it needs no such assistance to make it adhere firmly. Indeed, the only effect of them appears to be to destroy the *equality* of pressure, and thus *to take away much from the comfort of the wearer*, besides lessening, perhaps, the amount of adhesive power. The plan which I have most recently adopted, and which has given me more satisfaction than any other, is to place in the plaster model, before making my zinc cast, a piece of very thin wax paper, cut into such a shape as to extend over what would be the *most solid portion* of the palatal arch, taking care not to come, at any place, to the edge of the plate. It should be as thin as card paper, and pressed firmly down upon the cast; the object being to allow of the ultimate contact of the entire plate with the gum. It was in this way that I prepared the plate alluded to above.—*Dental News Letter.*

ARTICLE XI.

A Case of Reproduction of the Inferior Maxilla after Necrosis from Phosphorus Vapor.

In the summer of 1847, Professor Virchow was requested, by staff-surgeon Sachs, to make an examination of the body of a young girl who had recently died of disease of the lungs, and who had about nine months before lost the left half of her lower jaw by phosphoric necrosis. On examining the state of the maxilla, Hr. Virchow was greatly surprised to find a firm, strong, unusually curved bone, intimately united anteriorly with the sound half of the jaw, and movable at the joint—in short, a complete regeneration of the bone. The original necrosed portion of bone was found in its former position: it had given rise to profuse suppuration, and had become so nearly detached from its connections, that it only required division in the middle to be removed with ease. It consisted of the entire half of the lower jaw, with seven alveolar cavities, the angle, the articulating process, and the greater part of the coronary process. It weighed, (with a few detached exostoses,) 21.790 grammes, (=nearly 5½ drachms Eng.,) and measured, from the lower border of its angle to the point of separation anteriorly, 3⅛ inches. The anterior portion exhibited, both on its anterior and posterior surface, irregular cavities on its surface, which, in many parts, was completely destroyed. The canals for the passage of the vessels, especially on the internal border of the alveolar processes, were much enlarged. The posterior surface of the bone, from the posterior foramen along the extent of the molar teeth, presented the appearance of pumice-stone—a dirty grey color, and its surface was studded with small exostoses.

The new bone exhibited the outward form of the necrosed portion. The body was irregularly round. The alveolar processes replaced by a flat surface, pierced by a canal for the vessels. Along its lower border to its angle it measured 3¾

inches. It was sharply curved anteriorly. The angle of th bone was of the same shape in both, only that it was mo acute in the new bone. The length of the processes corre ponded. Both the processes terminated in small points, which were attached stout ligamentous bands, by which th bone was connected to the adjacent parts: a true joint had n been formed. Above the angle, in the middle of the ramu was a circular aperture half an inch in diameter. It was fill up by yellow fibrous tissue, which united at this spot the tw layers of periosteum, and through which numerous vesse passed, to be distributed through grooves or canals in the bon This bone weighed 37.820 grammes, (between 9 and drachms Eng.;) it had a reddish color, and a slight spong tissue.

Hr. Virchow appends some remarks to his relation of th case, pointing out that the disease should rather be regarde as periostitis than necrosis, and, referring to notices of oth cases of regeneration of the inferior maxilla, to prove that th same may obtain, as is found in the case of other bones.—*Ve handlungen Physicalisch-Medicinisch Gesellschaft in Wü burg*, 1850.

ARTICLE XII.

Cancerous Tumor within the Antrum—Removal of the Sup rior Maxillary Bone under the Influence of Chloroform.

M. Viguerie, senior surgeon of the Hotel Dieu of Toulo recently performed the following operation :

The patient, a maiden lady, forty-five years old, had suffere for several months from great pain in the eye, which orga offered no appearance of any lesion whatever. After soothin means had been used some time, it became clear, from th protrusion of the eye, that it was pushed forward by an exo tosis within the orbit : but it was some time afterwards di

covered that there was much difficulty in the passage of the air through the corresponding nostril, and at last no doubt remained as to the cause of the mischief. A tumor of either a polypous or sarcomatous description was developing itself within the antrum, and having found resistance to its development towards the tuberosity of the maxilla, it was pushing the floor of the orbit upwards, the eye forwards and outwards, and extending into the nasal fossæ. M. Viguerie then perceived that nothing but the removal of the whole superior maxilla could offer any chance to the patient. This last resource, however, was, from some circumstances independent of the surgeon's control, delayed for some time, during which the affection made considerable progress. The nasal orifice was plugged by a sarcomatous mass, and another was projecting under the skin, between the nose and the inner canthus of the eye. It was resolved that the method of M. Gensoul, of Lyons, should be adopted, and the operation took place on the 30th of December, 1847. Chloroform was used, by the patient's request: about one drachm, on a sponge, sufficed to throw her, in thirty seconds, into a quiet sleep.

A rectangular flap was made on the cheek by three incisions, of which the first descended vertically from the inner extremity of the eyebrow to the upper lip, in the direction of the canine tooth; the second, being external, ran from the center of the malar bone, a little below the outer canthus of the eye, vertically to meet the third, which was horizontal, and united the two first a little below the ala nasi. The operator had first intended to save the mouth, but he found that in doing this, he would be very confined as to reaching the mesial line, and he was obliged to cut through the lip. The square flap was quickly dissected and raised to level with the orbital margin, where it was held by an assistant. The surgeon then introduced an eyed and curved stilette into the inferior and external angle of the orbit, and made it return towards himself through the spheno-maxillary fissure. The extremity of the stilette had been provided with a thread, by means of which the chain saw was pulled after it, and the malar bone was sawed at the point

where it joins the maxillary. At this moment the patient woke, and became much agitated, evidently not knowing what was going on; she was at last soothed down again, the chloroform sponge was re-applied, and the operation proceeded, the patient remaining very quiet, without, however, falling into a torpid state. The nasal process of the maxillary bone being much softened, and involved in the cancerous growth, it was sufficient to detach it carefully from the surrounding parts; the palate process was separated from its healthy fellow by a section along the mesial line, performed with the straight chisel and mallet. The maxillary bone had still firm connections backwards, and it was impossible to attack the pterygoid process by the oblique section recommended by M. Gensoul; the floor of the orbit was so raised as not to allow the introduction of the chisel along it, for fear of wounding the eye. M. Viguerie then resolved to attempt the removal of the bone by moving it strongly from above downwards; and he succeeded after a little resistance. The sub-orbital nerve, and all the surrounding soft parts, were then divided, and the cancerous growth, which had invaded the internal parietes of the orbit, was very easily removed. The septum narium was then quite apparent; its mucous membrane looked red and healthy: sarcomatous masses, which had reached up to the frontal sinus, were removed by the index finger of the operator. As the upper part of the pterygoid process had been broken, in the efforts to remove the maxillary bone, the velum was hanging loosely on that side, and required to be pared off with the scissors; an artery which then bled freely was stopped by torsion; other portions of this cavernous wound were treated with the actual cautery, and cold water was afterwards syringed upon the parts. The patient, who had now full consciousness, easily rejected the blood and mucus which were falling into the pharynx. The flap was then brought down, and secured to the surrounding part by needles and twisted sutures; the lip was also united very carefully by the same process. The examination of the tumor confirmed the diagnosis: it was an encephaloid growth, which originated in the antrum, and had progressed as above mentioned.

The patient having been placed in bed, cold compresses were applied to the wound. No hemorrhage ensued, but sanguineous mucus continued for a few days to be discharged from the mouth. Slight traumatic fever supervened. On the eighth day the external wound was cicatrised; a little swelling persisted along the nose; all the needles were gradually removed as cicatrization proceeded. The eye was still prominent. The patient had stated that for a few hours after the operation, vision had been improved; but on the 20th of January, severe pain in the eye came on; profuse suppuration followed; the cornea broke on the 28th, and much matter, previously pent up in the anterior chamber, escaped. The eye was subsequently lost; but excepting this drawback, the condition of the case, at the time of the last report, was satisfactory—speech had become intelligible, the patient swallowed tolerably well, and very little deformity remained.

ARTICLE XIII.

Fatal Results from the Inhalation of Chloroform.

As anæsthetic agents are now being much employed in the practice of dental surgery, we subjoin an interesting and instructive account relative to a post mortem examination in a fatal case in England, from the inhalation of chloroform, which will at once convince the most sceptical that great care, judgment and caution, combined with great experience, are necessary, before these agents can or ought to be universally employed.

Dr. Glover, in a communication to the *London Lancet*, says: Dr. Simpson endeavors to show that death was not caused by chloroform, but by ordinary suffocation, or "drowning," the drowning being produced by one or two tea-spoonfuls of brandy and water: (apparently, Clarence might have dispensed with a butt of malmsey for his occasion.)

The principal objections of Professor Simpson to our conclusion—viz. that the chief cause of death was the congestion of the lungs, occasioned by the inhalation of chloroform—appear to be, 1st. That the appearances observed were those of asphyxia; 2dly. That they were not such as are produced by chloroform, because in animals poisoned by chloroform-vapor, the blood is coagulated in the right side of the heart—in asphyxia, fluid; and that reddening of the epiglottis is a sign of asphyxia, not of chloroform poisoning; and that the brain is not congested in chloroform poisoning, but is so in asphyxia.

I shall relate the principal facts observed in some recent experiments, without stating everything observed.

In the presence of my friend, Mr. Sheill, I poisoned a terrier dog with chloroform-vapor, and drowned another. I also performed a similar experiment upon two rabbits.

The chloroformed dog inhaled the chloroform from a kind of nozzle, open at the end, where there was a sponge impregnated with chloroform. Death could not take place from mere want of air. He appeared pretty nearly dead in two minutes and a half, but all signs of life were extinct within seven minutes. The symptoms were, at first, considerable struggling and a little wheezing, violent and irregular motion of the heart; then, forcible action of the abdominal muscles, stertorous breathing, loss of power over the limbs, and discharge of urine and feces; heart's action very feeble, pupils much dilated. All this applies to the first two minutes and a half. During the remaining period, a slight movement of the respiratory muscles was all that could be observed.

The drowned dog struggled under water for about two minutes.

On inspection, after the interval mentioned, both dogs were stiff, and limbs extended, pupils in the drowned more dilated.

In the chloroformed, the blood was almost quite fluid in the large veins; heart distended with dark blood, mostly coagulated in both its cavities; the left lung, (the animal had been laid on its left side,) was especially congested, it was enormously so; the other lung was also very much congested, but

the left was in some places like liver. Both lungs were mottled and full of blood; some bloody froth was found in the bronchi; the trachea and larynx, also the epiglottis, redder than natural.

In the drowned, the blood was more coagulated in the great veins, but less so in the heart, than in the chloroformed; but the blood was by no means quite fluid in the heart. It was rather of a treacly consistence, very dark, and there were numerous coagula—very little blood on the left side. The lungs were congested in a very different manner from what appeared in the chloroformed dog. They were certainly much congested, but the congestion was more livid, not so florid; in patches, not uniform; and there was much froth, and apparently water, in the lungs. The larynx and epiglottis were not so vascular. Soot arising from the rain water in the tub in which the drowning was effected, could be traced distinctly in the larynx and into the lungs.

The abdominal organs were rather congested in both cases; the bladder, empty in the chloroformed, contained a little water in the drowned; the membranes of the brain, and organ itself, more vascular in the chloroformed.

In experiments by Orfila, on corpses placed in water in which animal charcoal was mixed, the charcoal was found in the air passages and lungs.—*Traité de Medicine Legali*, t. ii, 3d ed., p. 385.

That the blood is not necessarily fluid in the heart in asphyxia produced by drowning, is shown by the observations of Lafosse and Avisard, stated by Orfila. (Ibid. p. 391.) "Lafosse found the blood polypous and concrete in some drowned persons. We have found, in reality, once only, some fibrinous clots in the blood of a drowned person, and M. Avisard says that he has seen it coagulated or semi-coagulated in the right auricles and ventricles of two individuals drowned while living." In a rabbit which I drowned, the blood, twenty-four hours after death, was found in solid coagulated masses, both on the right and left sides of the heart, (auricles and ventricles,) and in large veins. At the time when I drowned this rabbit,

I also chloroformed another, in the presence of Mr. Sheill, (who also saw both rabbits opened.) It was killed in a few seconds, apparently as speedily as by prussic acid; the principal differences were the following: the blood was more solid in the drowned; the lungs presented appearances similar to those observed in the dog's; the larynx, trachea, brain and its membranes, much more vascular in the chloroformed.

In another very strong dog, which I killed with the vapor of chloroform in about fifteen minutes, on immediate inspection, the same enormous congestion of the lungs was observed; congestion of the brain, much serum in the ventricles, very considerable reddening of the larynx, trachea and epiglottis; irritability of the voluntary muscles diminished, peristaltic action went on. Heart enormously distended with dark fluid blood, principally on the right side; its irritability destroyed.

No inference can be drawn from the state of the abdominal organs, as to the cause of death by chloroform or ordinary asphyxia.

In Dr. Jamieson's case, at Aberdeen, the post-mortem appearances were essentially similar to those observed in the case of Hannah Greener; also in the recent case of poisoning by ether in France. What they were in the fatal case at Birkenhead does not yet appear, but death seems to have been produced by pulmonary apoplexy. According to Dr. Simpson's explanation of the Aberdeen case, as given in the *Scotsman*, the person contrived to fall forward on a wet towel, (wet, too, by a volatile fluid,) so cleverly, as to seal hermetically both nose and mouth!

I agree with Dr. Jamieson, that the subject of his paper died from asphyxia produced by chloroform. No doubt the appearances which occur in chloroform poisoning are very similar to those produced by ordinary asphyxia, (speaking generally;) but there remains the difference in the character of the pulmonary congestion. But I believe that chloroform may kill by syncope, by its effect in stopping the heart's action, when we may have no congestion of the lung. With regard to Professor Simpson's assertion, that the blood is *always* coagulated in

the heart in death from chloroform, fluid in asphyxia, we see that it is neither uniformly fluid nor uniformly solid in either case. It was fluid in Dr. Jamieson's case, and in the recent fatal ether case in France.

Professor Simpson's assertion, that reddening of the larynx and epiglottis, and congestion of the brain, do not occur in chloroform poisoning, is shown to be erroneous.

Two other arguments require to be stated against Professor Simpson's assertions.

He makes out, I think, that Hannah Greener was hardly properly under the influence of chloroform. But if this were the case, how came the reflex phenomena of both larynx and pharynx to be destroyed? which would necessarily be the case, according to the Professor's view of the cause of death. This argument has been touched on by a recent correspondent of the Lancet. Or how could, as Dr. Meggison observes, even choking produce such enormous congestion of the lungs, when the heart was not acting?

Sir John Fife and I were of opinion that the congestion of the lung was the cause of death, because it was so enormous as to cast every other post-mortem appearance into the shade.

Of the power of chloroform to produce this congestion, I warned the profession in a letter, published in the *Medical Gazette*, of December 3d, when all was *couleur de rose* concerning chloroform; and the experiments of Mr. Wakley, &c., have abundantly established the reality and formidable nature of this power. Nevertheless, I give no opinion as to the use of chloroform. I believe it to be both more powerful and more dangerous than ether. In a recent case here of a formidable character, I advised a friend to use it. We could hardly expect so great a boon as the removal of pain in surgical operations, without a *per contra*.

ARTICLE XIV.

Two Cases in which the Hair, Teeth and Skin were very Imperfectly Developed.

DR. THURNAM, of York, read before the *Medical and Chirurgical Society*, the cases of two cousins, who were distinguished through life by the almost complete absence of the hair, by the teeth being not more than four in number, by the delicate and defective structure of the skin, and by the absence of sensible perspiration and tears. The author embodied in his paper, a description, by Mr. Erasmus Wilson, of the microscopic character of the skin in one of the cases, from which it appeared that the dermis was in a state of extreme laxity and apparent atrophy. The sudoriparous glands were not wanting, but their ducts were unusually delicate, and their epithelial, and consequently secreting lining, was very thin. The patient died, at the age of fifty-eight, from disease of the lungs. The author pointed out and considered some of the physiological and pathological questions connected with these cases, and concluded his communication with a notice of such analogous instances as have been recorded.

Dr. Williams said the case related in the paper recalled to his mind the case of a young lady who was described to him as being without hair and without teeth. When he saw her, he found that she was not entirely so. She was fifteen years of age; her hair was fine, scanty and white; she had scarcely any hair on her eye-brows, or lashes. She had three or four projections resembling teeth, which were decayed. The nose was imperfectly developed, and she breathed with difficulty through the nostrils. She suffered from chronic ulceration, attended by a discharge, having an unpleasant odor, from the lining membrane of the nares. She had great delicacy of constitution and appearance, and her manner was so timid, that she was thought by some to be imbecile. This, however, was the result of a neglected education. Under proper care she

mproved. Menstruation was not yet established, although here were indications of its approach. She had never perspired. A tonic plan of treatment had been resorted to.

Dr. Thurnam said, that in the second case detailed in his paper, the patient suffered from ulceration of the nares.

ARTICLE XV.

Fistula Lachrymalis caused by Syphilis.

Dr. Tavignot sketches, in the *Journal des Connaissances Medico-Chirurgicales*, a rapid history of this form of fistula; it is the tertiary form of syphilis, which occasions the disease of the lachrymal sac; the ascending branch of the superior maxillary having been invaded by osteitis or periostitis. The diagnosis reposes upon three orders of signs: 1. The succession of previous symptoms, the appreciation of which is not always an easy matter, particularly if mercury, having been exhibited, has interfered with the regular succession of morbid manifestations; the recollections of the patient, and the various stains which the disease may have left upon the body, will, however, in most cases, powerfully assist the diagnosis. 2. The local symptoms of the fistula; and, 3. The concomitant syphilitic manifestations. When the latter are present, the task of the surgeon is greatly simplified; but in some cases it is not so, and, the fistula lachrymalis being the only symptom observable, it becomes necessary to examine if, under the influence of syphilis, it may not present some characteristic local appearances. In simple fistula, when the contents of the sac have been removed, the bony structure of the diseased region is found in a state of perfect regularity—a fact which is easily ascertained by comparison with the healthy side. When syphilis has produced the deformity, on the contrary, in most cases a hard swelling may be felt on the side of the nose, in the region corresponding to

the nasal duct. The os unguis, the nasal bones, or the angu lar prominence of the os frontis, may also be affected wit osteitis, and betray the nature of the case by their tumefactio Often, in these cases, the superior maxillary being also dis eased, the incisor teeth are movable, not *in* their alveol but *with* them, showing that a portion of the bone is loosened The treatment recommended is, in the first place, that whic experience has proved to be most efficient in tertiary syphilis namely, hydroiodate of potass, in doses of from ten grains t one drachm daily. When the swelling of the bones has sub sided, if the symptoms of fistula lachrymalis have not disap peared, the usual treatment of this affection should be resorte to, the specific character of the malady having been removed its consequences still persisting.

ARTICLE XVI.

Medicine and Surgery in Egypt.

From the Editorial Correspondence of the Boston Medical and Surgical Journal.

Contrary to my expectation, when the last communicatio was made from Cairo, I have passed three months in Egypt which has given me a full and satisfactory opportunity of see- ing nearly all its great antiquities. After completing the sur- vey, from the shore of the Mediterranean, to the ancient Syene, where stood the tower spoken of by the prophet Ezekiel, step- ping into and mounting temples till wearied with the labor, I then twice crossed the Desert of Arabia—having been twenty- one days on the back of a camel. The spare hours have been devoted to collecting such medical and surgical notes of the country as could be relied upon, and this letter embraces some of them.

As before remarked, there are three leading maladies in Egypt, for which physicians exert all their skill, but with only

temporary success. First, the plague—about the origin and treatment of which no two agree, any more than in England or our own country in regard to the origin or treatment of cholera. Second, ophthalmia, which receives a diversity of treatment. Third, cholera, which goeth where it listeth, and admits of little palliation by medicine.

As to ophthalmia, which I have seen extensively through the whole Nilotic extent of Egypt, to me there is nothing obscure in its origin there. Filth gives rise to it: it always has and always will do so, till the customs and habits of the Arabs and Jews, the principal sufferers, are radically changed—but this will not probably happen, nor the disease, in all its aggravated and hopeless forms, cease to exist, while water flows from the Mountains of the Moon, down the inclined plane of the Nile. Once in a while, the men and women of the country wash their faces; but when they do, they touch almost everywhere but their eyes. They are unstomachable objects at all times, and just as much so after rubbing their faces as before. The margins of the eyelids look red and fretted in the incipient forms of the disease, which makes them still more cautious about touching them with water. An impression exists, that the eyes should not be wet, and thus the angles are always in a bad state, especially in children and infants. Swarms of flies are invariably crowding for a place—and when they fly off, the purulent matter with which their feet are laden is transferred to the eyes of others, and thus, it is probable, the disease is extensively propagated. The dragoman in the service of myself and traveling associates to the first cataract of the Nile, at one time had fearful indications of an acute attack of ophthalmia, which was an anticipated affliction to us, since our intercourse with the people, and the success of our researches, depended essentially on his tongue and eyes. He was urged to bathe his eyes frequently in cold water, and to sleep with a pledget over them, kept well saturated with it. To this he objected, bringing up the old story that nobody dare apply water under such and such circumstances; but I insisted, and by the second day the aspect was completely changed, and

within a week he perfectly recovered. In a second instance, a man, officially connected with a public functionary in Cairo, discovered indications of approaching ophthalmia, and was urged to the same course of treatment. He, too, had his whims and prejudices to contend with, but the uncomfortable thought of becoming blind secured the service of the water, and he speedily recovered. When leeches, the usual preliminary course, are applied, I have observed that no reduction of inflammation follows, although the excessive pain and sense of fulness in the ball, and another disagreeable feeling, that of grains of sand under the lid, may subside. The physicians here deplete, sometimes very much; but the evidence of the bad success of their treatment is found in the multitude of blind men, women and children who overrun the whole valley of Egypt.

In the Desert of Arabia, I made it a matter of special inquiry, whether ophthalmia was there; but it was ascertained that the Bedouin Arabs, those dreaded nomads, whose hand is against overybody, and everybody's hand against them, are not only never subject to attacks of this form of disease, but are almost invulnerable to every other form. They are thin, spare, tall, bronze-colored people, with coal-black, restless eyes, full of activity and deviltry. My recollections of them are painfully vivid, from the circumstance that while traveling in company with a large mercantile caravan of sixty camels from Ramlah, bound to Egypt, over the haji road, we were greatly alarmed, one night, by the rumored attack of the Bedouins. There were two, at the moment, quartered on the hospitality of the traveling Arabs, who are in more fear of these lawless possessors of the desert, than of the courbash of the sultan.

With me it is a settled point, that extreme personal filthiness and neglect is the cause of ophthalmia in Egypt. The sparkling particles of sand in the desert, it is believed, produce no bad effects. Yet the Bedouins rarely wash themselves, for it is difficult to procure water enough to meet the demands of thirst. They, however, wipe their eyes and dry-wash their faces. When an Arab child is born, as I was informed by a lady of

extensive and thorough knowledge of the habits of the Arabs, as well as the Levantines, (that is, those born in the country from European, Syrian, Jewish and other stocks,) the infant is not washed till it is a year old! Mothers, as I noticed repeatedly, take no pains to drive the flies away from foraging on their children's eyes. In the bazars, among the Jew brokers, and various other classes, I have often gazed at them with astonishment and pity, on account of the cluster of flies prowling about their sore, ulcerated optics. Cleanliness would unquestionably prevent the disease; and a consistent antiphlogistic treatment, seasonably adopted, would effectually cure it, when once developed; but as neither the one nor the other is pursued, ophthalmia is destined to be perpetuated in Egypt while inhabited by the races that now occupy it.

From Dr. Abbott, of Cairo, of whom mention has previously been made, and Dr. Farquar, of Alexandria, both distinguished English practitioners of medicine and surgery, I have obtained information touching the character of the predominant diseases of Egypt, in addition to that collected by personal observation.

Typhus is an annual visitant, principally in the cities, and sweeps off very many persons. The foreign residents, of which the Italians and English are predominant, are severe sufferers by it. Dr. Farquar informs me that intermittents are extensively prevalent in Lower Egypt, and vast numbers die of it. Medications, thus far, have not been successful. The overflowing of the Nile leaves a vast plateau of country in a muddy state for months, as was noticed in passing over the ground in which the fellahs or farmers are obliged to labor, ankle deep, to cover the seed they may have sown. The evaporation under a burning sun has a peculiar influence on the atmosphere, which deranges the vital machinery of the human system. Pulmonary comsumption, one would naturally suppose, from the singular customs of the lower orders of people, would be the all-prevailing and incurable disease. Yet the cases are not numerous; and what is worthy of special record, comparatively rare in places where it would at first seem to be most prevalent. Mechanics, and laborers of all denominations, sailors,

&c., including females, go entirely barefooted during life. They are partly amphibious near the Nile, being always in the water, regardless of cold or crocodiles. They sleep, in the one thin cotton garment worn through the day, out of doors, on the bare earth, or in damp, mud hovels—but they have generally excellent health.

Infantile diseases, which embrace a long catalogue of undefined ails, carry off immense multitudes of children. Small-pox also prevails. Dr. Farquar says that mothers invariably stuff their infants with whatever food they have for themselves. They as frequently force bits of carrot down their untried throats, as something more emollient; and to that cause he attributes a great amount of infantile mortality. When they lose their children, they console themselves with the hope of having more. It is the never-ceasing ambition of both sexes, in every condition of life, in Egypt, to have a numerous offspring. So strong is this desire, that women, and some of a very tender age, as has previously been mentioned, visit certain touchstones in different parts of the country—generally some ancient portion of a pillar or block with hieroglyphical figures—which have the reputation of making them fertile, by saying certain prayers over them. Dr. Abbott informed me that he one day went into an obscure yard, in which he had stored some mummies, where, to his surprise, he found a large collection of females, who displayed great energy in jumping back and forth over the embalmed carcases. On inquiring what they were doing with his property, they excused themselves by saying they had heard that, by stepping twelve times over a mummy, it would make them fruitful! Possibly their faith may have some fecundating influence. I cannot explain the anomaly of this universal desire—for anomaly it is, contrasted with the dread of a numerous offspring in other countries. It has always been so in the Orient, from the remotest epoch, and probably will continue a characteristic of the people through all succeeding ages. Fatal child-birth seems hardly known. Physicians are rarely consulted in cases of obstetrics. Syphilis is widely spread, and sometimes formidable in its desolating effects on

the tissues. I have noticed many a nose in the streets of Cairo, minus all below the bridge. It is singular that the dancing girls—known from the earliest historical periods as the *almeh*—who are prostitutes by profession, and numerous all over Upper and Lower Egypt, are quite free from it, according to the report of those who should be credited. I have seen very many of these singular females—and the question frequently came up in my mind, who are they? They are not Arabs; nor are they Copts—that is, descendants of the original inhabitants, the pyramid builders. They have the facial contour of the Malays, and they also strongly resemble the gypsies seen ranging over England. No one could answer questions respecting them, beyond saying, "they came in the boats."

The Turks are addicted to that one atrocious vice for which Sodom and Gomorrah were consumed by fire from heaven; it appertains to every great man in Egypt. It is without a parallel in the annals of wickedness; yet it is not recognised as a crime, and if it were, those who are the most infamously guilty are above the reach of the law. I could relate a multitude of facts, from the lips of eminent medical gentlemen, illustrative of the weight and depth of this abomination of abominations; but as Herodotus said, in speaking of certain mysteries taught him by the priests, when he visited Egypt twenty-three centuries ago, I do not feel at liberty to reveal them. A harem of females is bad enough, but a harem of small boys puts humanity to shame.

There are one or two military hospitals in the country, at the head of which is a foreign physician or surgeon, assisted by the native Arab doctors, who have been trained to the profession at the expense of the pashaw. Dr. Farquar is surgeon of one of these institutions, at Alexandria, at a salary of seventy-five dollars a month. The duties no way interfere with his private practice. But the surgery is small, made up principally of accidents. Tumors are rarely seen; amputations are not frequent, but couching is a common operation. Distorted limbs are hardly ever seen. I only saw two cases of club-foot in Egypt. One was a mendicant in Cairo, who invariably run after me on

his hands and knees; and the other a little girl, in the desert in a caravan.

Cholera has been a desolating scourge here. Coming down the Nile, I saw many of the returning pilgrims from Mecca who came in at Kannah, from the Corsair road, and took boats. They gave a fearful account of its devastations among the congregated thousands at the shrine of the prophet. In crossing the desert, there was one of the haji going to Constantinople who informed me that 20,000 of the pilgrims had died within a few weeks before he left. When I first landed at Alexandria, the first day of November, 1850, the cholera was just subsiding. The following statistics of its fatality were procured from Dr. Farquar, being extracted from a table which he is expecting to publish in England, in some of the periodicals. Whole number of deaths at Cairo, from Aug. 1st to Sept. 14th—of cholera, 1951; of other disease, 2310. Total, 4261. Population assumed to exceed 200,000. Deaths in Alexandria, from Aug. 3d to Nov. 11th, 1850—of cholera, 711; all other diseases, 2320. Total, 3031. This falls far below the popular representations in regard to the fatality of cholera at the time of my arrival. It was the common impression, probably, of the ignorant, that all deaths, at the period of its prevalence, were caused by it. Exaggerated accounts produced an alarm that reached London. While at Naples, Rome, and finally at Malta, very frightful accounts were circulated of the sweeping destruction cholera was making at Alexandria; which has now dwindled down to 711 deaths in a population of over 100,000—so assumed in the absence of any census.

On a former occasion, some general remarks were transmitted in regard to the Egyptian school of medicine, the glory of which was exhibited during the influential days of Clot Bey, the Musselmanized French surgeon, whose name and reputation as an expert operator, and on account of his daring experiments in the plague, are matters of professional history. With the death of his patron, that wise and shamefully slandered old Mahomet Ali, the sun of his greatness immediately set. However, besides a reputation, he got what every adventurer in the ser-

vice of the viceroy hopes for, a splendid fortune—and with it made tracks for belle France, where he is resting upon his oars, and quaffiing such bottles of champagne as he never drank in the palace of Schonbra, although his master indulged him with the possession of everything else. He is accused now of squandering the pashaw's money, in unnecessarily ordering the fabrication of all sorts of surgical instruments, without reference to cost, and that were of no utility, beyond constituting a museum. Say, however, what they may of him—it being fine sport to kick a dead lion—Clot Bey was a great man in his day. He made the medical school at Cairo, and during his administration it had some character. Latterly it has had none. The French influence has died out—the Italian ought to be kicked out. A more beggarly, sycophantic set of unprincipled toadies never existed. At El Arish, the ancient Rhinocolura—where political offenders, after having their noses cut off, were sent for exile—the spot, within the half-mud fortress, still remaining, in which King Baldwin, of Crusade memory, died—the last town of Egypt, on the borders of Palestine—is a quarantine station, on the top of a sand swell, which is confided to the charge of one of these cunning renegadoes. He honestly confessed to me that he was not a physician, and, further, that he knew nothing about the practice of medicine. He further said that he should like my advice in a difficult case within the tabooed enclosure! He also wished to know whether I had any medicines with me, as he had none. He was health officer, and had the full control of the establishment. Afterwards, a dirty, bare-legged fellow, in the wake of a caravan in which I was traveling, accidentally finding out that I was a hakeem, asked assistance on account of a bronchial inflammation. He had consulted the grand hakeem at El Arish, who furnished a powder that was to act like magic, but instead of affording relief, augmented the evil about the soft palate. I found it was wood ashes, which he was directed to have blown down the throat, in large pinches, several times a day, and a lad was actually seen blowing it down with a hollow stick.

At the time of writing, some German medical aspirants are

apparently coming into favor, at Cairo, with the court. They have got possession of the medical school, at all events; and possibly, by their gentlemanly address, their show of science, and their apparent sympathy for the poor, may reign in turn. Dr. Greisingen, from Kiel; Dr. Reger, formerly of Tubingen; and Dr. Lantner, of Vienna, I have every reason for believing, are truly learned men. These gentlemen lecture on the different branches in French, which is translated, word by word, to the students, in Arabic. These native incipient doctors are gathered together, not of their own accord, probable no one of them ever voluntarily seeking a professional education. The most promising-looking chaps are selected, to be converted into physicians and surgeons—being taken when about fourteen years of age, and forthwith put in the way of learning the elements of anatomy and operative surgery, besides being made familiar with other branches of knowledge considered essential to the position they are destined to hold as army and naval medical officers. They are both clothed and fed from the public purse, and some of them, particularly when Mahomet Ali was alive, with whom the institution originated, were sent to Paris, Montpelier, England, &c., to be put in communication with a higher order of minds than were to be found in the medical staff of his school of medicine. In the three different visits I made to Cairo, staying a week on each occasion, the lectures were not going on—consequently I am not personally familiar with the daily routine of instruction. In the course of four or five years, reference unquestionably being had to the age of the pupil—and, it is probable, a due respect being paid also to the public demands for medical servants—they have a certificate of qualification, and leap at once into a commission of army or marine surgeons. These Arab students are invariably thick-skulled fellows, who never make any great progress, and consequently there is no hope of another Albufeda to write upon science or the antiquities of Egypt. A German medical gentleman from Berlin, who is passing the winter at Cairo, on account of impaired health, told me that there were several of the government protegées in Europe now, perfecting themselves

for medical practice among their countrymen. Thus far, none of the Arabians have been put in places of high professional responsibility. They are the journeymen, under the guidance of Europeans of more calibre than has yet been exhibited in the ranks of the home-made faculty.

I cannot deny myself the pleasure of adverting to Dr. Mussey's widely-promulgated anathemas against the use of tobacco—the habitual use of which is as much objected to by myself as by that staunch apostle of temperance in eating, drinking and smoking. But with all his zeal, his philanthropy, his bold arguments and cogent reasoning on this subject, in Egypt he would find stumbling-blocks in the way of his conclusions, that would be worse to manage than a hogshead of the best Kentucky in the market. Men, from childhood, smoke incessantly in Egypt. They smoke everywhere and under all circumstances. There is no cessation—not an hour when a cloud of curling smoke is not ascending. It is the first and prominent civility to hand a pipe—and smoke you must, or suffer under the imputation of being no gentleman; and were that good man of Cincinnati sitting where this sentence is written, he would himself smoke, like every one else here. People live long enough, in all conscience, notwithstanding this everlasting smoking, for they outlive their usefulness—outlive everything but animal wants—live, some of them, till everybody wishes they were dead! I have not been an inattentive observer of the smoking mania in Germany and other parts of continental Europe; on the contrary, a strict inquiry into the moral and constitutional effects of the habit, very judiciously called a vice, was instituted as I traveled from kingdom to kingdom where it prevailed; and I have arrived at the gratifying conclusion that if persons wish to smoke, they may, and I shall not waste my breath in warring against the habit.

Another kind of smoking is practiced in Egypt, and probably in Syria, unknown to us in America, viz. that of Indian hemp. Cigars are charged with it, and there are apartments where individuals may go and draw in, through a long pipe-stem, a kind of smoke that exalts a dirty, bare-footed rascal

into an imaginary prince. In a few minutes he sees the gates of a Mahomedan paradise, gazes wildly towards the sky, and laughs till all consciousness passes away, and he falls into a lethargy of considerable duration. I suspect it is hemp, and not opium, as generally supposed, with which cigars are drugged, and made the instruments, in the hands of designing men, in London and other great cities on the continent, for the perpetration of many dreadful crimes.

I have collected many curious and novel facts, illustrative of the dietetic regimen and social habits of Arabs, Jews, Nubians, Abyssinians—slaves and freemen—with whom I have had as much acquaintance as is desirable, in their own countries: but how or when they are to be used, is uncertain. A knowledge of them would sadly unhinge some excellent theories of our regenerators of society. Were they to attempt the introduction of some of their hobbies into these countries, they would be laughed at as fools; and after the blush of mortification at the absurdity of their moonshine propositions had subsided, they would laugh themselves at their own stupidity and narrow-minded conceptions of the elements of humanity.

On the way to Beyroot, Feb. 4, 1851.

ARTICLE XVII.

A Lecture on the Diseases of the Inferior Maxilla. Delivered by John Simon, Esq., Surgeon to St. Thomas' Hospital.

Gentlemen:—As the subject on which I mean to lecture to-day has not yet passed into the text-books of surgery, I shall tell you something of its history, before I detail the cases which will serve for its illustration.

During the last five years, several successive papers, by various German and French surgeons, have concurred to establish the fact, that persons exposed to the vapors of phosphorus—

as, for instance, in the manufacture of lucifer-matches, are liable to contract a disease, under which more or less of their jaws becomes necrosed, and exfoliates. Lorinser, a hospital-surgeon of Vienna, was the first who published anything definite on the matter; his paper bears date early in 1845, and the cases recorded in it run back to 1839. Shortly afterwards, Professor Heyfelder, of Erlangen, and M. Strohl, of Strasburg, furnished additional evidence, founded on their own independent observations; and since that time, a number of practical surgeons, here and elsewhere, have had occasion to note a repetition of the phenomena to which those original observers first drew attention.

In 1847, two Nuremburg professors, Von Bibra and Geist, (the one a chemist and physiologist, the other a surgeon,) published conjointly a monograph on the subject, which, in addition to a lucid summary of all that had previously been written, contains many valuable original statements of the anatomical and chemical changes observed in the affected bone. To those of you who read German, I would recommend the perusal of this book, not only as a compendium of all that is known on the subject, but likewise as an admirable instance of exact pathological investigation. Those who are unable to read it in the original language, may find a good summary of its contents in the second number of the *British and Foreign Medico-Chirurgical Review.* You will likewise find the subject alluded to in Mr. Stanley's recent work on the Diseases of the Bones.

Now, gentlemen, I may tell you, very briefly, the gist of what our foreign fellow-laborers have ascertained for us in respect of this new disease. Commencing with the general statement, I repeat that destructive disease of the jaw has been found frequently to occur among lucifer-match-makers; and the object of inquiry has been, starting from that vague supposed connection, to ascertain whether the relation between the employment and the disease be a real relation of cause and effect, and if so, what is the *modus operandi* of the phosphoric fumes, and what are the morbid processes which constitute the disease.

First, the reality of the connection has been established by ex periments performed on the lower animals; the disease has bee produced artificially in rabbits, by exposure to the phosphori fumes, under circumstances similar to those which determin the disease in man. These circumstances require a little ex planation. Hundreds of persons are occupied in lucifer-making who sustain no injury from the process; a few, on the othe hand, contract the disease with extraordinary readiness. Wh do so few persons suffer? and why do they suffer always i the jaws?

To take the latter question first, you may be disposed to an swer, from analogy, "that it is no uncommon thing for a poiso to select a single spot for the local manifestation of its consti tutional influence: that if phosphorus impregnates the bloo injuriously, *some* organ is sure to be selected for its futur destructive operation; and if some organ, why not the jaws just as arsenic selects the stomach, mercury the gums, can tharides the kidneys, opium the brain; or just as the poison o secondary syphilis, when it attacks the bones, always settle preferentially on certain parts of the skeleton—on the tibia, th cranium, the clavicle," &c. And if it were suggested to you instead of this explanation, that the jaws perhaps may deriv their greater liability to the disease from their more immediat exposure to the fumes, and that, according to this view, th affection may be merely a local one, arising where the opera tion of the cause is most direct and most powerful; if, I say this suggestion were made to you, you might object, (as Mr Stanley does,) that "the vapor is also directly inhaled throug the nasal passages, and yet it produces no effect on the bone which bound those passages, though they, equally with th jaws, are exposed to its influence as a local excitant."

Notwithstanding this apparent difficulty, the fact is, that th phosphoric fumes do operate only locally, and select the jaw only because of its greater exposure to the irritant. The tw difficulties of explanation that I have referred to—first, that th maxillary bones are affected rather than the bones of the nasa cavities; and secondly, that the proportion of sufferers by th

disease is very small in comparison with the large number of persons engaged in the manufactories: both these difficulties vanish with what I have now to tell you. The disease only attacks persons with carious teeth, and it operates in the buccal rather than in the nasal cavities, because it is only in the former that the phosphoric vapor is enabled, by carious teeth and ulcerated gums, to come into direct contact with the periosteum, on which its irritating influence is subsequently exerted.

In the experiments which Professor Von Bibra performed on rabbits, he found that the characteristic disease could only be produced when he had previously, by artificial means, denuded the periosteum of the jaw in the animals which he was about to expose to the chronic influence of the phosphoric atmosphere; and the persons in the lucifer manufactories who pursue the occupation with impunity, are those whose teeth are free from caries. Such persons suffer neither in the jaw nor constitutionally; contrary to what one might expect, the vapor appears incapable of producing any general cachexia, and the the utmost evil ascribed to its operation in the lucifer-works, beyond the one under consideration, seems to be that of irritating the respiratory passages and producing chronic bronchitis. This effect, however, appears to be unusual.

It appears, then, that the fumes of phosphorus, as evolved in lucifer-match manufactories, coming into immediate relation with the periosteum, are capable of producing, and ordinarily do produce, the disease in question; and it is suggested that, in all probability, the noxious agent is not phosphoric acid, since, in phosphorus manufactories, where the air is saturated with that acid, no such results are known. Probably, (it is inferred,) the agent is either some lower oxydation of phosphorus—perhaps, hypo-phosphorous acid, or else that mysterious phenomenon, ozone, which is said to be largely developed during the volatilization of phosphorus. To us, (as surgeons,) the determination of this question matters little. Whether the agent be an acid, soluble in the saliva, and capable of hastening the disintegration of the earthy substance of the jaw—

an hypothesis which to me, I confess, seems hardly tenable—or, (according to the other supposition,) be a principle which would exceedingly accelerate the oxydation and decay of the animal substance; in either case, for our purposes, we have a sufficient explanation of what ensues. For it is an axiom in pathology, that wherever you have an accelerated waste of tissue, *there* also you have an increased determination of blood; and I have had occasion, over and over again, to show you how easily the limits are passed which divide this merely *hypertrophic hyperæmia* from the phenomena and tendencies of active inflammation.

In the case of Brewerton, which I shall read presently, you will have an account of the ordinary symptoms which attend the disease; but I dare say it will be the more intelligible for my telling you first, generally, what are the processes to be observed.

The disease consists essentially in inflammation of the periosteum, terminating in necrosis or death of the bone. There is a first stage, in which the disease of the periosteum is akin to hypertrophy—a stage of increased vascularity and exalted function. During this stage, which is almost indefinitely chronic, the congested periosteum becomes infiltrated, of course, with more than the ordinary exudation of nutritive lymph; and this lymph, according to the normal function of the part, tends to develop itself into bone. Thus, in the lower jaw, at least, we have a laminated deposit of new bone, (possessed of certain microscopical and chemical peculiarities, on which I need not now insist,) taking place around the old one. Just as an inflammatory effusion in the belly gravitates to the pelvis, so, about the lower jaw, we find that this infiltration settles down towards the base; and consequently, that the largest amount of osteophytic incrustation lies about the inferior circumference of the bone. There is a remarkable difference, in this respect, between the two jaws. The greater porosity of the upper jaw probably invites more interstitial deposit into its structure than would be possible in the denser substance of the lower; and the remainder of the effusion from the inflamed periosteum seems,

in this case, to find its way into the mouth—perhaps by the same gravitation which determines its subsidence *from* the mouth, where the lower jaw is affected. Be this as it may, the fact is, that the upper jaw does not show those osseous incrustations which are invariable in the lower.

A slow, periosteal hypertrophy, with gradual alteration of tissue, and, (in the lower jaw at least,) a laminated growth of bone in the periosteum and beneath it, constitute the first stage of the disease. This stage is accompanied by little inconvenience; and as the patient has carious teeth, whatever occasional flying pains are felt, are ascribed to this cause, and are noticed in the history of the case only as "tooth-ache." Presently, when the long continuance and progress of these changes have materially disorganized the periosteum, and qualified the nutrition of the bone, some accidental occurrence, (perhaps exposure to cold,) will determine an attack of acute inflammation: great tumefaction and severe pain arise; the new growth rapidly undergoes caries and dissolution; the soft parts as rapidly yield to ulceration or gangrene; the jaw, more or less completely, is at once struck with necrosis, and is seen lying in the midst of disorganized tissues, which pour out a profuse and insufferably fetid discharge.* From this point onwards, speaking surgically, the case is an ordinary one, viz. a sequestrum, larger or smaller, to be separated by the same processes of nature, or by the same operations of art, as a sequestrum produced under any other deleterious influence. I need hardly tell you that this second stage of the disease is one of great constitutional disturbance, under the first febrile influence of which, or under the subsequent exhaustive discharges, many patients die. It is likewise a period of extreme suffering.

From these general statements, you will be able to follow with facility and with interest, the history of two patients now in the hospital: one, (which I shall read first,) a very ques-

* It is stated that a large quantity of phosphorus is eliminated in this discharge—a point which I have had no means of verifying personally.—Vide Von Bibra u. Geist, op. cit., p. 338.

tionable case of the phosphorus-disease; the other, a very complete and admirable illustration of it.

"L. G. F. H——, aged thirty-six, admitted into Abraham's ward, under Mr. Simon, on Oct. 23d, 1849, is a native and inhabitant of Nottingham; is of middle height, thin, with dull, sallow complexion, and scanty black hair; has worked at the business of a framework-knitter for the last twenty-six years, for sixteen hours daily, on an average; habits, temperate and regular. At the time of his admission into the hospital, he had a deep ulceration at the right angle of the mouth, which had eaten away the substance of the lip, as far inwards as the median line, and downwards to the junction of lip and gum. The edges of this ulceration were peculiarly sharp and abrupt. Along the inner surface of the lip, the ulceration extended to the left commissure of the mouth, and at either side, obliquely, downwards to the gum. The left side of the jaw was covered with apparently healthy cicatrized gum, but had no teeth, and had lost its alveolar margin. On the right side, the last molar tooth remained firm and sound; and one of the bicuspids also stood, with its inner root laid bare. The other teeth of this side were gone, as were likewise their alveoli. The remaining bone was partially scarred over. The under surface of the tongue was ulcerated down to the frænum, continuously with the ulceration of the lip. From these surfaces there was considerable discharge of healthy pus, unattended with fetor. In addition to this extensive sore, there was a single superficial circular ulceration, the size of a half-crown, situated on the cheek, over the angle of the jaw, not communicating with the interior of the mouth, and crusted over with a flat brown scab.

His account of himself was the following:

"Seventeen years ago, (1832,) he contracted primary syphilis, and had buboes in either groin; never since that time had he suffered any venereal infection. Between 1835 and 1839, he had several attacks, described as erysipelas of the head; but denies having had any distinct symptoms of secondary syphilis. Eight years ago, he suffered with some chronic cutaneous disease, for which he underwent medical treatment.

In June, 1846, the gums over the upper jaw, just under the nose, became very sore, red outside, and putrid within; the affection extended over the gums of the four front teeth, became gradually more and more painful, but was confined to the same space for about two months, when it gradually spread along the gums towards the back teeth, leaving the first part almost well. Presently, the throat became sore, and an abscess formed externally on each side, under the angle of the jaw; these were punctured, and a discharge proceeded from them for some weeks, when they healed on the outside, but began to discharge inside the throat; this lasted five months, and then ceased; but the gum, where the disease commenced, has ever since continued somewhat sore and red. During 1847 and 1848, he became subject to several symptoms indicating the presence of pulmonary tubercles; obstinate cough, followed and accompanied by hemoptysis, and, as the disease advanced, by purulent expectoration, diarrhea, and nocturnal perspiration. Through this period, he emaciated considerably, and since Sept., 1848, has been unable to follow his ordinary employment. Early in the present year, a friend recommended him to keep a piece of ginger-root constantly in his mouth, "to warm his chest," which he did, placing it in the front of his mouth, just within his lower lip, and carrying it, at other times, in his waistcoat-pocket. When occupying the latter situation, it lay with half a boxful of *lucifer-matches*, which he was in the habit of using occasionally, and which for this purpose he carried loose in his pocket. He continued to chew the ginger for about three weeks. A few days after commencing, he noticed that the ginger tasted disagreeably of phosphorus, but did not regard this, till, after using it for two weeks, he felt one day a gentle stinging in the gums, in front of the lower jaw, and over only a small space. The state of the teeth, at this time, was generally good, with the exception of the two bicuspids, on the right side of the lower jaw. Next day the stinging became more apparent, commencing from the right bicuspid, and day by day gradually grew more severe and more extensive, while the gums became red and swelled. In

April, two of the teeth, (canine and incisor,) the gums of which had been thus affected, became loose, and were extracted. Soon afterwards, he fancied that others were growing in their places, instead of which the two sockets appeared and fell out as a decayed and friable piece of bone, as large as the last joint of the little finger. This exfoliation was accompanied by a very fetid discharge. After two or three weeks, two more of the teeth, (incisors,) were affected in the same way, were removed, and their alveoli followed; while the jaw generally got swelled and sore, discharging very foul matter. As the disease extended, the teeth continued to drop, two and two, with an interval of two or three weeks between, the disease proceeding first from the right bicuspids to the front, and then from before backward along the left side of the jaw, till all the teeth on that side were removed, with one exception; the last of them fell at the close of August. Then, from the first point of attack on the right side, the disease extended backward, the teeth becoming similarly affected, till all but two were removed, viz. the last molar, which continued sound and firm, and the bicuspid, which from the first had been decayed, and was now bare, down to the bottom of the inner fang, and rather loosened. During this period, (from April to August,) ulceration was proceeding on the gum, tongue, and inside of the lip; and about the middle of September had extended through the lip, in the form of the ulcer now observed there."

Now, to my view, gentlemen, this case presented the characters of constitutional syphilitic disease. I am not sure that I could have conveyed to another person the evidence that the man's general appearance gave to my mind, and which was confirmed by the deep sharp-cut chasm of his lip, and the circular crusted ulcer on his cheek. But taking his whole appearance and his whole history into account, I determined on treating him as though for syphilitic cachexia, and the result has justified that opinion. After a few days of treatment with nitric acid and quinine, during which, though he improved in general health, his ulcers remained stationary and painful, I commenced the exhibition of iodide of potass. The superficial

sore on the cheek immediately began to cleanse itself, and to skin over; the deep ulcer began to granulate, and in the last few days has so nearly completed its cicatrization, that the man cannot now be prevailed on to remain any longer an inmate of the hospital.

The result of treatment, in this case, may perhaps contribute to fix the syphilitic nature of this patient's affection; it yielded to iodine with a readiness peculiar to that one class of diseases. And there are other reasons in favor of this view. He had suffered with an affection of the gums in the upper jaw three years before his lower jaw suffered, and though no necrosis occurred at that time, yet, not improbably, there was exposure of bone as a cause of the fetor then observed. Further, in the phosphorus disease, ulceration of the soft parts is unknown, except in immediate dependence on the separation of dead bone, and could not, on any pathological grounds, be supposed to continue for months after the last discharge of sequestrum, or to extend itself to surfaces so remote from the affected bone. It would not extend further in space, or longer in time, than an inflammatory infiltration could be traced; it would exist only as ulceration in an infiltrated part, and in this lip there was no thickening whatsoever. Still I must observe to you, that necrosis of the lower jaw, occurring in the manner described in this case, is not a frequent event in syphilis; and if we admit, as perhaps we may, that in this patient's case there has been continuous evidence of a cachectical state since his first syphilitic infection, we may yet allow the possibility of the phosphorus matches having acted concurrently with his cachexia, as a local determining cause for the disease.

You will notice, that in analysing this case, I have not alluded to the question of the sufficiency of the alleged cause for producing phosphorus-disease of the jaw, and I cannot pretend to decide whether the quantity of phosphorus introduced into the mouth by the patient's eccentric habit was enough to affect the bone. I have argued it on other grounds; but I may inform you that there are some reasons for supposing that a small quantity may suffice to produce very serious effects, and

that Dr. Geist quotes an instance where exfoliation of several pieces of the lower jaw seems to have been induced in a little scrofulous girl, seven years of age, by her indulging herself evening after evening, in the amusement of playing with lucifer matches, and watching their ignition in the dark.

The next case is more complete and satisfactory, and will enable you to form a good notion of the ordinary progress of symptoms in such cases.

"James Brewerton, aged forty-six, admitted under Mr. Simon, into Abraham's ward, July 31, 1849, with disease of the lower jaw, attributed by himself to the inhalation of phosphorus fumes. In giving an account of himself, he stated that till he was thirty-two years of age, he had pursued the various occupations of ironmonger, hard-store keeper, and trunk-maker, in this country and in the United States, and had uniformly enjoyed good health. He has never had syphilis, nor undergone mercurial treatment. Once he had gonorrhea, which was cured by copaiba. He began to make lucifer-matches, on his own account, in 1835, using a composition of chlorate of potash and antimony, and did not begin to use phosphorus till he commenced the manufacture of 'congreves,' in 1837. At that period he was an active, healthy man, thirty-four years old. The manner of making 'congreves' was then a secret, and he used to mix the ingredients by himself, in a private room, to which the work-people, who dipped and packed, were not admitted. The mixing always occupied half an hour daily, but in addition, he spent much time in making various experiments, to ascertain the best proportion of ingredients, &c., so that he was much exposed to phosphorus fumes, in, usually, an ill-ventilated room. He never used arsenic. After he had mixed and given out the materials, he was constantly in the apartments where the dipping and drying of the matches were carried on. The only burning of phosphorus was such as arose from accidental explosions of small quantities of matches.

"To the best of his recollection, he had no decayed teeth in 1837, when he first became exposed to the fumes of phos-

phorus. From 1837 till 1845, the patient continued actively engaged in his trade.* During the years 1846–7, and –8, he left off making matches, and made instead, 'fusees,' for lighting cigars; the materials being the same as for congreves, but their employment, perhaps, less hurtful, as no heat is employed in mixing them. It was while making fusees that he first began to be troubled with carious teeth; the three molars on the left side of the lower jaw being so painful that he was obliged to masticate on the right side exclusively. Afterwards, the teeth on the right side pained him, and he was forced to employ the left ones again. At Christmas, 1848, he resumed the manufacture of congreves, moving, for this purpose, from his former residence to Nottingham.†

"In the latter town, he occupied larger and better-aired premises than had previously been used there, and mixed all the composition with his own hands. The work went on regularly, except now and then, when they had to wait for want of materials from London. On such occasions, there was a pause for a week or so.

* While detailing his own case, he mentioned, that after he had been about four years congreve-match making, two boys, who had been during that time employed by him, and in good health, went to another similar manufactory, and, (he was told,) were attacked with disease of the jaws, and died.

† The circumstance which occasioned his migration is worth mentioning, as it gives an additional illustration of the disease. A friend of his, who had been constantly employed in congreve-match making, at Derby and Nottingham, for six years, was incapacitated from work by his jaw-bones becoming diseased. He, (like Brewerton,) had always mixed his materials in private, for the sake of secrecy, and in a close, small room, where much of the manufacturing was afterwards carried on—so that he was even more exposed to inhale the phosphorus fumes than Brewerton had been. This person had been under the care of Dr. Taylor, of Nottingham, in the summer of 1848, and lost at that time a large portion of the superior maxillary bones. Dr. Taylor's kindness has contributed these specimens to our museum. The same disease afterwards attacked the right half of this man's lower jaw. The second attack obliged him to desist from work, and invite the assistance of Brewerton, who hereupon moved from London to Nottingham.

"About the end of May, Brewerton lay for some time on th bank of the river, waiting to see a boat-race. The ground wa damp, from rain having fallen two or three days before; an when, after a few days, he found a swelling about the left sid of the lower jaw, accompanied with pains in the bone, ex tending to different parts of the head and face, he attribute the symptoms to his having caught cold. He consulted Dr Taylor, who extracted two loose and decayed teeth, (left mo lars,) and the patient himself took out another. All thes teeth were rotted away at the crowns, but their fangs wer entire.

"At the time of his admission, at the end of July, his con dition was as follows: Three remaining incisors quite loose entire gum on left side swollen and spongy; fetid pus es caping, on the slightest pressure, from the previous site of th extracted teeth; a probe passed into these openings strikes o bare bone; over these parts there was considerable exterio swelling; pulse quick and feeble; general strength impaired face puffy and very pallid; appetite good, but inability to tak solid food, owing to condition of gums; sleep disturbed b pains in the jaw; and complaint also of general articula pains.

"On the 5th August, the remaining incisors were extracted and on the 15th, the dens sapientiæ of the affected side. O the 22d, the right canine tooth came out, and the bicuspid were found to be loose; and pain and swelling increased o this half of the face, speedily bringing it into the same condi tion as the half first affected.

"Meanwhile the ulceration of the gum over the diseased alveoli advanced; and as the several openings became con fluent, the alveolar margin of the bone became exposed. This commencement once made, the soft parts rapidly retracted from the surface of the bone, and the denudation of the latter became every day more complete. Its exposure was attended with a copious and most fetid suppuration.

"From then till now, the only difference that has occurred in the patient's state, has consisted in the gradually advancing

solation of the bone. His general health has also undergone considerable depression; he keeps his bed entirely; is very pale and feeble: has an exceedingly weak pulse; occasionally gets a little chilly or feverish; and has, from time to time, some disposition to looseness of the bowels; the appetite, fortunately, keeps good."

At the present time, as you look at the man, you see that the lower half of his face is considerably enlarged and hardened by deposit round the inferior maxilla; and you may observe that this deposit, (which extends half way up the ascending ramus on one side, and still higher on the other,) increases in thickness as it approaches the lower margin of the bone. Part of this swelling depends on inflammatory infiltration into the areolar tissue and muscles; part on the chronic osseous incrustation which I have described to you, and which is now undergoing caries. Within these swollen parts, as you open the mouth, you see and feel the whole body of the jaw uncovered, necrosed and discolored. You see that the soft parts have detached themselves, and shrunken from the bone, both in front and behind, so that it lies bare as far back as the junction of its body and rami. Beyond this line, the soft parts still cover the bone, but apparently are unattached to it through a still further extent of surface. The whole body of the lower jaw, with probably a considerable share of each ramus, has to separate itself, and be cast off as a sequestrum.

Now, gentlemen, with respect to the treatment of this case in its present stage, there are two or three points to which I must direct your attention. First, you may notice that I leave the jaw pretty much to itself. I give the patient the means of cleansing his mouth frequently with deodorizing and astringent lotions, sometimes of myrrh, sometimes of chloride of lime; (I say *lotions*, because latterly he has been unable to effect his purpose by using them as gargles, and has used them by means of pieces of sponge attached to a wooden holder like a pencil-stick.) This is an important part of the treatment, because of the extreme fetor of the discharge, and the disgust and sickness which it occasions to the unfortunate patient, as

well as to other persons. As regards the separation of th
jaw, I am unwilling to adopt any active surgical interferenc
In this respect, I look on the case as I should look on one
necrosis of half the shaft of the femur, or tibia. I know th
nature is working on at the process of separation, and I kno
that if the man's strength holds out, she will complete th
process in a neater and less destructive manner than I cou
effect it by surgical interference. In other severe cases
necrosis, such as I have just instanced, we are not very oft
driven to amputation; we are generally enabled, by judicio
general treatment, to sustain the vital powers of the patie
till nature has divided the dead parts from the living, and pe
mitted us to extract the former, as a sequestrum, witho
having recourse to any mutilative operation. So I hope
do here: I hope to support the patient till his necrosed ja
detaches itself, and then to draw it out of his mouth. Natur
in this event, will gradually have accommodated the soft par
to the change, and the subsequent deformity will be far le
than if I should now disarticulate the jaw. Further, I tak
into account that the latter operation, under the most favor
ble circumstances, is a serious one; and that in a case lik
the present, where the soft parts are extensively, and, to
certain extent, idiopathically diseased, it would be especial
so; for if erysipelas should arise after the operation, (a chan
always to be contemplated as possible in hospital practice,) a
these soft parts would infallibly slough. The man's gener
health, too, is not such as to invite any surgical operatio
which involves the extensive division of diseased and infi
trated tissues. Therefore I am anxious to avoid any operati
interference with the natural processes of separation; but
contrary to my hope, the man's health should give way—
his appetite should fail—if he should emaciate much more-
if hectic fever should arise and continue—if diarrhea, (whic
has occasionally troubled him,) should assume a serious con
plexion—if extensive perforation of the skin should be im
pending—if deglutition should be interfered with—I migh
under any of these circumstances, be driven from my positio

f *médicine expectante*, and be compelled to expose and dis-rticulate the jaw.

Meanwhile, you will observe that I am careful to give the atient as much support as diet and physic will convey. His ghastly, anæmic look made me, on first seeing him, think that e would bear iron with advantage; but, to my surprise, he as shown himself quite intolerant of the remedy. I have ried it in three forms—citrate, sulphate and sesquichloride; nd all these have so purged him, that I have been obliged to liscontinue their use, and to substitute for them the sulphate of quinine. This drug has probably been useful, though less so han steel would have been if he could have borne it.

When his pain has been very severe, I have allowed him a night dose of hydrochlorate of morphia; but have urged him o refrain as long as he can from seeking this narcotic, lest its employment should impair his appetite.

When his bowels have shown a disposition to run, I have checked them by doses of catechu, which I have combined with the compound tincture of cinchona.

You will notice, too, that, in respect of his diet, I do not leave him to the chance of mumbling hard victuals. I allow him extra meat, and have this reduced to a purée, or mash, by pounding in a mortar, so that he may bolt it without further mastication. He likewise has other fluid or semi-fluid nourishment; eggs, strong beef-tea, and the like; and is allowed a very liberal quantum of wine, occasionally with other stimulants, which I increase from time to time, as the condition of his general strength indicates a necessity. I detail these points of treatment to you, because they require care and vigilance, and because the issue of the case depends on them very much more than on the pharmacopœia.

I have not detained you with any remarks on the management of the earlier stage of the disease, anterior to necrosis, because I have not at present any opportunity of illustrating that stage to you. I will merely remind you, that so soon as the second or inflammatory stage of the disease has thoroughly set in, the bone seems in every case to be irrecoverably doom-

ed to necrosis; and I would therefore recommend you, in the event of your being called to a case at the transition-period between the two stages, when hypertrophy is passing into inflammation, to adopt, without hesitation, the most active measures for relief of the periosteum and bone. Leeches and general antiphlogistic treatment may do good; but the consideration of the pathology of this disease, together with the analogy of other periosteal affections, leads me to believe that the only real chance of doing good would lie in still more energetic measures; and I would recommend you, in any such instance, to make, with your scalpel, free vertical incisions through the gum, wherever tenderness and swelling exist; extending your line of cut upwards in the upper jaw, or downwards in the lower, as far as the structure of the parts will allow, bringing your incisions as near together as circumstances may require, and in every point carrying them clearly down to the bone, so as to afford the utmost relief and relaxation to the overloaded and tense periosteum. I believe that this method of procedure, (somewhat analogous to Mr. Tyrrell's for the relief of the cornea in gonorrheal ophthalmia,) would be the nearest approach to an effective one for checking the inflammatory stage of the disease, before it has reached an intensity which must inevitably destroy the jaw.

ARTICLE XVIII.

Microscopical Researches of Dr. Th. Schwann *into the Structure of the Teeth.*

2. *The Teeth.*—The teeth were formerly classed with the bones, but have of late been treated of as non-vascular structures, under the head of horny tissues. Since Miescher's discovery, however, that the vessels of bone also traverse only the medullary canaliculi, since Müller observed that the teeth,

like the bones, afford gelatine by boiling, and Retzius discovered osseous corpuscles in the ivory, it seems more correct to class the teeth with the bones again, and the more so, as we now know that the presence or absence of vessels proves no *essential* difference in the growth. The coalescence of the cell-walls which appears to take place in the ivory of the teeth forms an additional reason for our classing them with bone. The teeth, as is well known, consist of ivory, osseous substance, and enamel.

The Enamel.

The enamel consists, according to Purkinje, of square, or, according to Retzius, of hexagonal closely-aggregated prisms, which stand nearly perpendicular upon the surface of the ivory, and pass outwards in a slightly curved direction. It is at first soft, and if some of it be scratched off in that state, we obtain, what Müller has described as needle-shaped bodies pointed at both extremities. According to Purkinje, Raschkow and Retzius, some organic substance remains after the young enamel has been treated with hydrochloric acid, whilst Berzelius asserts that the enamel of mature teeth does not contain two per cent. of organic matter. For further details, I refer the reader to the excellent works of Purkinje, Raschkow and Fränkel, and those of Retzius, J. Müller and v. Linderer.

If an immature tooth of a child or mammal, (the pig, for instance,) be removed from its capsule, and placed in dilute hydrochloric acid, the organic substance of the enamel which remains after the solution of the earthy matter, may be separated from the ivory entire. It has exactly the form and size of the enamel previous to the action of the acid. It is very soft, and breaks readily in the direction of the fibres of the enamel. Examined with a high magnifying power and subdued light, it is found to be composed, like the enamel itself, of closely-aggregated prisms, which may be insulated from one another, so that each one forms an independent structure. This organic substance, therefore, cannot be, as Raschkow

and Retzius considered, a mere deposit from the moisture with which the enamel-fibres are at first surrounded, and thus a sort of cast of the enamel-fibres; but either the fibres must result from an ossification of these prisms, or the prisms must be hollow, and the inorganic substance deposited within them. When the enamel of the pig's tooth is examined with a subdued light, the contour of these organic prisms is found to be so dark, in comparison with their interior, that it can scarcely be regarded as the mere shaded outline of a solid prism, but suggests the idea of a cavity surrounded by a thin membrane. This distinction is, however, much less striking in human teeth, so that the question as to which of the two views is correct, must remain undecided.

What, then, is the process of formation of these enamel-prisms? According to Purkinje and Raschkow, the crown of the growing tooth is surrounded externally by a peculiar membrane, the enamel-membrane, the inner surface of which is composed of short hexagonal fibres, which stand perpendicularly upon the membrane, and are directed towards the enamel, so that each fibre of the enamel-membrane corresponds to an enamel-fibre. On examining a portion of this membrane, particularly that part which lies nearest the root of the tooth, we readily recognize in it the characteristic nuclei, some of them being furnished with nucleoli. They lie in a minutely granulous substance. This granulous aspect, however, is seen to be produced, in many situations, by granulated cells which contain the nuclei. Each nucleus is surrounded by a circular areola of small granules, and seems to lie in a minutely granulated globule, which we know to be the rudimentary form of most elementary cells. Some of these cells are prolonged into very delicate fibres; they appear to be young cells of areolar tissue; most of them, however, are round. The fibres or prisms of the membrane, which have a direction from its inner surface towards the enamel-fibres, have assumed a hexagonal form, which Raschkow attributes to their close contact. They very closely resemble the columnar epithelium upon mucous membranes, only that they are prismatic in their entire length,

that is, so far as they project out from the membrane to which they are attached. I am inclined, therefore, to regard them as merely elongated cells. In the recent state, they also contain a very distinct nucleus, which encloses its nucleolus. In the upper part of the enamel-membrane they lie quite close together; but in the portion nearest to the root of the tooth, they diminish in number, and stand insulated, so that at this part the structure of the membrane beneath them may also be recognized, and I suppose the round cells before mentioned to be the earlier condition of these prismatic cells. What, then, is the relation which these prismatic cells of the enamel-membrane bear to the prisms of the enamel? Purkinje and Raschkow regarded each fibre of the enamel-membrane as an excretory organ, a little gland which secreted the enamel-fibre corresponding to it. With our altered views of the growth of unorganized* tissues, however, this explanation, previously so plausible, loses much of its probability. Various other explanations might be offered in place of it, but I have not made sufficient observations to enable me to decide upon the correct one. Firstly, one might suppose the organic basis of the enamel-prisms to be cells, which are formed, and continue to grow independently upon the dental substance, having no other connection with the prisms of the enamel-membrane than that the latter furnishes their cytoblastema. This explanation, however, would compel us to regard the remarkable accordance which exists between the prisms of the enamel-membrane and those of the enamel as an accidental circumstance. But we should be obliged to adopt such a view, if it could be proved that another peculiar substance intervened between the enamel-membrane and the enamel, and I have several times observed such an one on the molar teeth of swine. It is very soft and full of vesicles, having the appearance of a slag. I think Purkinje mentions it also, but I cannot find the precise passage at this moment. It lays between the enamel-membrane and the

*[The author appears to use this word as synonymous for "non-vascular."—Trans.]

tooth, but I am not certain whether it was also present at those points where the formation of the enamel had already commenced, and whether, therefore, it actually interrupted the continuity of the enamel-membrane with the formed enamel. We might suppose, as a second explanation, that the enamel-prisms are uninterrupted continuations of the prisms of the enamel-membrane, which become filled towards one end with calcareous salts. This is a very improbable explanation, and the connection between the two structures is of too loose a nature to warrant its adoption. A third, and as I am at present disposed to think the most probable, explanation, is that the prismatic cells of the enamel-membrane separate from it, and coalesce with the enamel already formed, while at the same time their cavities either become filled with calcareous salts, or they become ossified throughout their entire thickness, their cavity being previously filled with an organic substance. This explanation makes the formation of the enamel accord with the growth of the other unorganized tissues treated of in the previous class. If we suppose, for example, that the little cylinders, (columnar epithelium) of the mucous membranes, (which, according to Henle, are constantly being thrown off,) could become ossified at the moment when they separated from the surface of the mucous membrane, we should obtain a covering to the membrane, consisting of little calcareous cylinders, each of which, however, would still have its organic basis like the enamel-fibres. Beneath this covering would be other cylinders not as yet ossified, which, when they in like manner became calcified, would add to its thickness, whilst new cylinders grew forth from the mucous membrane. The quantity of the organic basis is extremely small in the teeth of adults which have been exposed for a considerable time to the action of the saliva, a circumstance which I suppose to be referable to its undergoing a chemical solution in that fluid.

The Ivory.

This is known to consist of a structureless substance, traversed by a great many minute canals. These canals, (tubes,)

ave for the most part a radiate course from the cavity of the oth towards its external surface, and, according to Retzius, ften give off branches as they proceed. Their peripheral ter-inations are extremely minute; they are thicker towards the ental cavity, and, when the pulp is removed, open freely into . Müller observed that the tubes projected beyond the inter-ediate substance from the fractured surface of thinly-ground aminæ, and of lamellæ which had been macerated in hydro-hloric acid, and were surrounded, therefore, by a special mem-rane; Retzius also remarked the same upon a transverse sec-on. Purkinje and Müller noticed that when teeth are placed ink, the fluid penetrates into the tubes; they must therefore e hollow. If any of them contain calcareous matter, it must e only the most minute ones. According to Retzius, many eeth present corpuscles which resemble those of bone, and ke them send forth minute radiating canaliculi.

What relation, then, does the ivory bear to the cells? I ust at once avow that I cannot give a positive reply to this uestion, and that I only communicate the following imperfect vestigation for the sake of presenting a connected view of my bject. The formation of the dental substance is described y Purkinje and Raschkow as follows: "Primordio substantia entalis e fibris multifariam curvatis convexis lateribus sese ontingentibus ibique inter se concrescentibus composita appa-t. . . . . In ipso apice istæ fibræ æqualiter quamcun-ue regionem versus se diffundunt, attamen parietes laterales ersus directio longitudinalis prævalet, dum fibræ sinuosis exibus æqualique modo se invicem contingentes ibique ubi oncavæ apparent lacunas inter se relinquentes, ab apice coro-ali radicem versus ubicunque procedunt. Non nisi extremi arum fines tunc molles sunt ceteræ autem partes brevissimo mpore indorescunt. . . . . Substantiæ dentalis forma-onis secundum crassitudinem processus pari modo ac primo us ortu cogitandus est. Postquam . . . . fibrarum den-lium stratum depositum est, idem processus continuo ab ex-rna regione internam versus progreditur, germinis dentalis renchymate materiam suppeditante. . . . . Convexæ

fibrarum dentalium flexuræ, quæ juxta latitudinis dimensionem crescunt, dum ab externa regione internam versus procedunt, sibi invicem appositæ continuos canaliculos effingunt, qui ac substantiæ dentalis peripheriam exorsi multis parvis anfractibus ad pulpam dentalem cavumque ipsius tendunt, ibique aperti finiuntur, novis ibi, quamdiu substantiæ dentalis formatio durat, fibris dentalibus aggregandis inservientes."—(Raschkow, *Meletemata circa Mammalium Dentium Evolutionem.* Vratislav., 1835, p. 6.)

I must admit that I do not clearly understand some of this description, but if I rightly comprehend it, the dental substance originates from fibres which are formed in strata around the pulp, (the latter supplying the material for the purpose;) that these fibres then coalesce, leaving, however, spaces between them, which are the dental tubes. Since, according to Müller, the tubes are furnished with special walls, we can no longer regard them as mere spaces between the fibres. His observation, however, does not affect the explanation of the formation of the firm substance.

If a tooth be removed from its capsule, and macerated for some days in slightly diluted hydrochloric acid, the dental substance, which on the first withdrawal of the calcareous salts possessed a cartilaginous consistence, becomes so very soft that it can only be removed from the acid in very small portions with the forceps. This pappy mass is found, on examination, to consist of fibres, which may here and there be insulated. These fibres are too thick to be the walls of the tubes; they form the entire substance. Nor can they well be an artificial product, the result of the acid penetrating into the tubes, and dissolving, in the first instance, the substance in immediate contact with them, so that the intercellular substance remained undissolved in the form of a fibre; they are too regular and smooth for that. It appears rather that the dental substance is composed of these fibres, which have become blended together, that they are therefore identical with those fibres, by the coalescence of which, according to Purkinje and Raschkow, the dental cartilage is formed, and that

this coalescence is not so complete, but that it may be artificially dissolved. The fibres have the same course as the tubes in human teeth, but I could no longer perceive the tubes between them in this preparation; I could, however, recognize the fibres everywhere, save in the most external layers, which lay immediately under the enamel, in which situation the mass was more completely broken down by the acid, and traversed by more minute fibres of a different kind, having the most confused and varied directions, and which I suppose to have been the remains of the dental tubes.

We must therefore regard the dental substance as composed of fibres blended together, between which run tubes provided with special walls. The fibres and tubes are nearly perpendicular to the dental cavity in human teeth. What connection now is there between the fibres, or the tubes, and the cells? I should incline to the old opinion, that the dental substance is the ossified pulp. According to Purkinje and Raschkow, the pulp, in the first instance, consists of globules, of nearly uniform appearance, but has neither vessels nor nerves. At a subsequent period, vessels appear in it, and afterwards nerves. Upon the surface of the pulp, the globules are more regularly arranged, and more extended in the longitudinal direction, and are directed towards the outside perpendicularly, or at a slightly acute angle. These elongated globules are clearly cylindrical cells. In recent teeth, the characteristic nucleus with its nucleoli may be distinctly seen in them, and they very closely resemble the prisms of the enamel-membrane. The interior of the pulp also consists of round nucleated cells, between which the vessels and nerves pass. When the pulp of a young tooth is detached from its cavity, and the dental substance is examined, (without further preparation, or after the earthy matter has been withdrawn,) a stratum of the cylindrical cells of the pulp will be found to remain attached to its internal surface, at least to the lower part of it, where the newly-formed dental substance is yet thin and soft. These cells are of about the same size, and have the same course as the solid fibres of the dental substance; and since, on the one hand, they clearly

belong to the pulp, which follows from their accordance with the cylindrical cells that remain attached to the rest of its surface, and as, on the other hand, they are still more firmly connected with the dental substance than with the pulp, and remain affixed to the former, I suppose a transition to take place at that part, and the cylindrical cells of the pulp to be merely the earlier stage of the dental fibres, i. e. that the cells become filled with organic substance, solid and ossified. In some instances, these little cylinders are not found upon the dental substance, but a quantity of cell-nuclei seen in their place; these are very pale, and so intimately united with the dental substance, that they readily escape notice; when, however, attention is once attracted to them, it is impossible to mistake them, and they lie side by side, with extremely small interspaces. The facility with which the two structures may be separated, has been adduced as an argument against the opinion that the dental substance is the ossified pulp, and I fully acknowledge the weight of the objection. But the following circumstances deprive it of at least some of its importance. Firstly, some portion of the pulp actually remains attached to the dental substance; again, in ribs which are half ossified, the cartilage may easily be separated from the ossified portion; and lastly, the separation must be effected with more facility in the tooth, in consequence of the greater difference in consistence between the dental substance and the pulp. There are therefore, at least, reasons enough to warrant our entering more particularly into the details of this opinion. The pulp accords with all the other tissues of the fetus, therefore with cartilage, in being composed of cells: the difference between its consistence and that of the cartilage of mammalia, depends on this, that the quantity of cytoblastema, (to which the latter owes its hardness,) is very small, for the cylindrical cells of the pulp lie quite close together, at least such is the case on its surface. In this respect, the pulp bears a closer analogy to certain cartilages of animals lower in the scale, in which there is also only a small quantity of cytoblastema present, and the consistence of the cartilage is principally

occasioned by thickening of the cell-walls. As I have not actually observed the transition, I do not know whether the filling up of the cavities also takes place by thickening of the cell-walls, in this supposed conversion of the cells of the pulp into the dental fibres. If such be really the case, the cavities of the cells are in general so completely obliterated by it, that no cartilage-corpuscles remain. From the observations of Retzius, however, it might be supposed that some of the cells retain their cavities, and even become transformed into stellated cells; for he saw true osseous corpuscles in the dental substance. When the uppermost stratum of the pulp, consisting of cylindrical cells, has become converted into dental substance by ossification, the round cells lying immediately next beneath it in the parenchyma of the pulp, must first commence their transformation into cylindrical cells, the vessels of the stratum must become obliterated, and then this stratum ossified, and so on.

What, then, are the dental tubes? Retzius compares them to the calcigerous canaliculi of bone which issue from the osseous corpuscles, and I was myself at first of that opinion; for I regarded them as prolongations of cells, the bodies of which lay in the pulp. For, when the pulp is drawn out from the cavity of a pig's tooth, and its margins examined, it will be seen that each of the cylindrical cells of the surface of the pulp becomes elongated into a short minute fibre towards the dental substance, and that these fibres are about as numerous as the tubes projecting upon the surface of the pulp. I thought, formerly, that they became elongated to form the dental tubes, and that the intertubular substance was merely intercellular substance between these prolongations. But I was compelled to relinquish that idea, in consequence of there being no such appearance in the human tooth, and because the explanation led to difficulties with respect to the teeth of the pike, in which, according to Retzius, an immediate transition of the dental into the osseous substance takes place. If one of the largest teeth in the lower jaw of the pike be sawn off, deprived of its earthy matter by means of hydrochloric acid, and then divided

into thin longitudinal sections, the dental substance will
seen to form a hollow cone, which is filled with osseous su
stance. The dental substance is transparent, and consists
fibres which have a direction from the point towards the ba
of the cone. Canals traverse the osseous substance, resem
bling the Haversian medullary canals of ordinary bone, on
they are not so regular. The dental tubes, then, are connecte
with these canals of the proper osseous substance, and may
distinctly seen issuing from them in a funnel-shaped form
The canaliculi soon ramify in the dental substance, and,
they run across the thickness of the dental cone, interlace wi
the dental fibres. According to this view, the dental tub
would correspond to the medullary or Haversian canaliculi
bone, and not to the calcigerous canaliculi proceeding from t
osseous corpuscles. It appears impossible, however, to
assured of the right explanation of all the structural relations
the dental substance, until its development is examined in tee
differing widely from each other in construction.

Osseous Substance of the Teeth.

This requires no particular explanation, as it entirely accor
with the ordinary osseous substance.

Having examined in detail the tissues comprehended in th
class, and compared them one with another, we have yet
consider the entire class in relation to those which have bee
previously discussed, and to observe how much our knowledg
of the transformations which the cells are capable of underg
ing, has been advanced by the study of it.

It is easy to see which elements of the tissues of this an
the preceding class correspond. There the whole tissue co
sisted of cells, closely crowded together, and the intercellul
substance was almost *nil.* Here we find the like arrangeme
only in the lowest stage of development of the most simp
cartilages. In such as are more highly developed, those of a
the mammalia for example, the cells lie surrounded by a larg
quantity of intercellular substance, which forms the proper ca

laginous substance; but the cell-walls contribute only very ightly, or not at all, to its formation. The proper firm sub- ance of these higher cartilages, therefore, has its analogy in e former class, only in the minimum of cytoblastema by which e cells are connected, while, on the other hand, it corresponds ith that which, in the first class, was the fluid, wherein the olated cells were formed. The cartilage-cells in this class, owever, correspond precisely to the epithelium-cells, the ather-cells, &c., &c., in the preceding one, and the blood- orpuscles, mucus-corpuscles, &c., in the first class.

We have not found any new changes in the form of the ells in this class. Most of them were angular, somewhat ap- roaching the circular form; and stellated cell, so far at least s we may be permitted to regard the osseous corpuscles as uch, were also frequently met with. Some cells, which were emarkably elongated, were observed near to the surface of everal cartilages, in which situation they are known as greatly longated cartilage-corpuscles; still, however, this appearance s never presented by the cells of this class in so remarkable a egree as it is by those of the crystalline lens in the previous ne. The fibro-cartilages, on the other hand, form the imme- iate transition from this to the following class, for in them a undle of fibres seems to be formed out of each cartilage-cor- uscle, a process which we shall consider more minutely when reating of cellular (areolar) tissue in the next class.

We have observed the formation of cells around the pre- iously-existing nucleus, and their progressive growth, going n in this class in a similar manner to that exhibited in the receding, and the true cartilage-cells were also seen to form round a cytoblast which lay external to the cells already de- eloped. On the other hand, a formation of cells also takes lace within the true cartilage-cells, but it is probable that they ave a different signification from those within which they are enerated. A deviation from the previous class seemed to oc- ur with respect to the spot at which the young cells are formed, n relation to the entire tissue. In the former class, so far as e could perceive, they were formed at that part only where

the tissue was in immediate contact with the organized substance. The formation of the new cells in cartilage, it is true, did not take place throughout the entire thickness of the tissue, but, (so long at least as the cartilage itself is not furnished with vessels,) only near the surface, and therefore, at the spot where it was in contact with the organized substance; still, however, it not only took place at that point of contact, but went on also between the cells most recently formed, as if cartilage had a greater capacity of imbibition, so that the cytoblastema penetrating from the blood-vessels into the parenchyma arrived at the deeper-seated portions of the tissue more speedily; and, therefore, retained its fresh plastic force even in that situation; or, as if the cartilage itself possessed a higher vitality, and, therefore, the cytoblastema retained its productive power for a longer period, although penetrating quite as slowly as in the previous class.

Although the modifications in the form of the cells of this class vary but slightly from those of the preceding one, yet we see two striking changes in the cells and their cytoblastema, namely, the coalescence of the cell-walls and ossification. The thickening and transformation of the cell-walls were very distinct in the last class, for example, in feathers. Here a still more strongly-marked thickening of the cell-walls takes place in several cartilage cells. The external contours of the walls, however, gradually disappear in such instances, and a coalescence takes place to such an extent as to leave merely the cell-cavities perceptible, lying in an homogeneous substance. The blending of the cell-walls takes place either between the walls of neighboring cells, in instances where they are in immediate contact, or, with the intercellular substance, when the cells are surrounded by it. Further investigations are required in order to decide the question as to whether this blending be so complete that it cannot in any way be dissolved, the simple fact being, that the cell-walls are no longer discernible with the microscope. I shall not bring forward the splitting of the dental fibres as examples here, nor indeed make any reference to the teeth in this retrospect, their explanation being

as yet too problematical. It has, however, been already mentioned as a doubtful point, whether a coalescence of the walls actually takes place in all cartilage-cells, for instance, in those of the higher animals.

Ossification appears to occur especially, perhaps exclusively, in those cartilages which have a greater quantity of intercellular substance. It consists, probably, in a chemical union between the calcareous salts and the firm portion of the cartilage substance. In the first commencement of the process, the cartilage frequently acquires a granulous appearance, which subsequently disappears, the entire substance meanwhile becoming gradually dark. At the same time, the cartilage-cells undergo a transformation into the osseous corpuscles, a process which must probably be explained as analogous to the formation of the stellated pigment-cells. There is reason to suppose that the osseous corpuscles and the canaliculi which issue from them, also become filled with earthy salts by the calcifying process.

The class of cells now under consideration, has yet another point of especial interest for us, since it is the first in which organized structures, that is, structures provided with vessels, occur. The accordance between the elementary cells of unorganized animal tissues and vegetable cells might be conceded, without granting a connexion between the organized issues, (which are especially characteristic of animals,) and he structure of vegetables. A distinction had always been drawn between the growth of the organized and that of the norganized structures; and much has already been said in a general way, about a vegetative growth of the non-vascular tructures, the crystalline lens, for instance, though the analogy which existed between their elementary particles was not roved. Cartilage, then, is the first structure which teaches s that a tissue, which, at a later period at least, contains essels, is composed of cells, perfectly according, in their delopment, with those of plants; and, therefore, that a similar ormative principle is the basis both of the organized and norganized tissues. We shall have further evidence of this

presented to us in the following classes, which comprise the rest of the tissues—those, indeed, which are most perfectly organized, and the most important to the animal organism. In them we shall also find that the formation of cells is the general principle of development, and that their elementary particles are derived from cells, although, at the first glance, one would scarcely imagine that any connection could exist between them and cells.

ARTICLE XIX.

Two Cases of Successful Removal of the Upper Jaw, on account of Malignant Disease of the Antrum. By Robert L. Macdonnell, M. D., &c., of Montreal.

Case I.—Mr. ———, aged 55, a farmer, residing in the Eastern Townships, consulted me in June, 1849, on account of a tumor which occupied the right cheek, and extended into the nostril of the same side. He stated that about a year previous, he had received a blow on the cheek, which at the time caused but little annoyance, but that three months afterwards he began to suffer some pain in the seat of the injury, and he then noticed a small hard tumor, at first scarcely perceptible, but which soon increased in size, and gradually acquired its present dimensions. Within the last few nonths, the tumor became larger and more painful, and extended into the right nostril, and frequent and profuse attacks of epistaxis quickly ensued. His general health began to fail, and he lost all hope of discussing the tumor by poultices and fomentations—the only treatment he had latterly employed. The surgeon to whom he applied in the country, extracted a molar tooth, and explored the cavity of the antrum, but nothing except a few drops of blood escaped. When I saw him, the tumor was about the size of a hen egg, and projected from the canine fossa of the superior maxilla, to which it was firmly adherent.

The skin covering it was tense and shining. The right nostril was blocked up by a fungous growth, which was hard and resisting, of a dark reddish color, and exhibited a great tendency to bleed on being touched. A ridge-like projection was likewise observed above the alveolar process of the same side, but no protrusion through the hard palate was noticed. The eye-ball was not displaced, and no impairment of vision had taken place. His general health appeared good, with the exception of the debility induced by the losses of blood from the nasal portion of the tumor. In consultation with Drs. Campbell, Howard and Crawford, it was resolved to excise the superior maxilla, and accordingly the operation was performed, on the 18th of June, in the following manner:

A short horizontal incision was made along the zygoma to the body of the malar bone, from which point the incision was now carried in a curvilinear manner to the angle of the mouth. The convexity of this incision was directed towards the ear. The flap was then dissected from off the tumor as far as the nose, and its external extent, and that of the maxilla, were thus fully exposed—a natural separation between the incisors rendered the extraction of one of them unnecessary. The alveolar process, hard palate and malar bone were divided by means of a small sharp forceps, and the nasal process of the maxilla was divided with equal ease. An incision was made through the mucous membrane along the median line of the palate, and transversely corresponding to the junction of the palate and maxillary bones, and with a slight wrenching motion the bone and the diseased mass were removed; a few touches of the knife liberated them from any soft adhesions that remained undivided.

The orbital portion of the maxilla was not removed, as it appeared quite healthy. The facial artery was the only vessel that required a ligature, and the amount of blood lost was very trifling.

The flap was laid down, and the edges of the wound brought together by twisted and interrupted sutures; the cavity in the mouth was filled with fine lint, and water dressing was applied externally.

July 21st —Some of the sutures and needles were removed, and the external wound was found to have united nearly throughout its whole extent, a small portion in its center being still open. The patient was able to sit up and walk about, no collapse having followed the operation. For the next fortnight nothing worthy of notice occurred; and as he was very anxious to return home, he was allowed to do so, a small portion of the external wound remaining still open.

I heard from him several times after his departure from Montreal; in some of his letters he complained of pain in the former situation of the tumor, and of a discharge of a sanious fluid from the nostril. Whilst preparing this for the press, I have applied to his former medical attendant for more accurate information, but have not, as yet, received an answer to my inquiries. He was alive, however, twelve months after the operation, a fact clearly in favor of its performance, for there can be but little doubt that the frequent attacks of hemorrhage would have carried him off in a few months, even if the disease had not produced death by pressure on important parts.

Case II.—J. Wallace, aged 30, but looking much older, of a sallow complexion, tall, and of thin spare habit, was admitted into the Montreal General Hospital, under my care, May 2, 1850. He stated that two years before he noticed a small tumor, of a wart-like nature, growing from the hard palate, which, as soon as it had attained the size of a marble, remained stationary until five months before admission, when it began to spread over the palate, so as to occupy nearly three-fourths of its extent. He also remarked, that a tumor had commenced to form on the left superior maxillary bone, and now, for the first time, he suffered from deep-seated pain in the cheek. He applied to Dr. Lang, of the medical staff at Bytown, who made an exploratory puncture with a small trocar, through the portion of the tumor presenting itself in the palate, but nothing, he says, escaped from the opening. Lunar caustic, in substance and solution, was frequently introduced through the opening, but produced no effect on the size or consistence of the tumor.

On admission, three-fourths of the palate were occupied by a hard tumor, covered by red mucous membrane; on the left side of the face, a large prominence was observed, which, when looked at sideways, nearly obscured the nose; it displaced the nasal bone which lay upon its surface, and extended to the edge of the orbit. A portion of the growth could be seen in the upper part of the left nostril, but no hemorrhage had as yet proceeded from it, nor did he complain of pain when it was touched. The eyesight was not impaired. The articulation was very indistinct, and he had latterly experienced much difficulty in masticating and swallowing his food.

The removal of the bone was performed on the 6th of May, in the following manner, in the presence of the staff of the hospital and several visitors. As the tumor encroached so much upon the nose, and had extended to the palate-plate of the *opposite* maxilla, I considered it more prudent to make two incisions through the integuments, as recommended by Liston; one externally, (as in the first case,) in a curved direction from the malar portion of the zygoma, to the angle of the mouth; the other in a perpendicular direction from the inner angle of the eye, along the side of the nose, as far as its ala; then transversely along the upper portion of the lip, as far as the median fissure, whence it was carried perpendicularly down through the whole thickness of the lip. The flap thus made was dissected upwards, and the tumor and bone fully exposed. The infra-orbital nerve was divided, and the globe of the eye and the inferior oblique muscle carefully dissected from the orbital plate. The mucous membrane was next divided, between the tumor and the alveolar process of the *right* maxilla, and a transverse incision was carried along the palato-maxillary articulation. The incisors having been removed before the operation was commenced, one blade of Liston's forceps was passed into the *right* nostril close to the septum, and the alveolar process and palate plate of the *right* maxillary bone were readily divided. The left malar bone and the nasal process of the left maxillary were next cut through, and the tumor was thus detached, with the exception of a few

adhesions of the soft parts, which required the use of the knife.

In this case, chloroform was administered during the first stage of the operation, but the patient was allowed to recover from its effects before the division of the bones was commenced.

The facial artery was the only vessel that required tying, and very little blood was lost. The collapse which followed the operation was very great, and required for its treatment a liberal administration of hot wine and diffusible stimulants. The patient became, moreover, extremely desponding, and from both these circumstances, the prognosis was very doubtful for the first forty-eight hours. On the third day, however, he rallied, and was able to permit the wounds to be dressed, which were found to have united by the first intention throughout their whole extent.

From this period nothing important occurred. The cavity filled up rapidly with healthy granulations, and exhibited a marked tendency to contract. His articulation and power of deglutition were greatly improved, and his general health soon became re-established; and on June 5th he left hospital to return to his occupation, which was that of a farmer.

A short time ago I addressed a note to Dr. Lang, to inquire about this patient, to which he politely sent me the following answer:

Bytown, *Dec.* 16, 1850.

Dear Sir:—I must apologize for delaying so long to answer your note; but I have been unable, until this morning, to obtain the intelligence you wished. The individual whose maxilla you removed, is now doing well, and at his daily work. The report I have had is, that *the bone is meeting*. Of course you know what they mean by this. The operation has been perfectly successful.

On examination, both these tumors proved to be malignant; they both presented well-marked examples of encephaloid cancer; and it is not a little curious, that seeing they resembled one another in their minute pathological characters, they should have differed so widely in the symptoms accompanying each.

In the first case the growth was rapid, and the nasal portion of the disease bled freely when touched, and from it profuse hemorrhages had spontaneously proceeded; whereas, in the second case, the tumor was slow in its growth, and, even when punctured with a trocar, exhibited no tendency to hemorrhage, nor did any fungus sprout from the opening thus made—consequences so frequent, that few surgeons like opening into, or otherwise meddling with, such growths. In fact, though the patient's countenance indicated malignant disease, I was in hopes, from the hardness of the tumor, its slow growth, its arising in the *palate-plate first*, its indisposition to bleed, and its not having taken on excessive action, nor thrown out fungous growths, when punctured and injected with caustic, that it would prove to be non-malignant.

In the first case, it was my intention to have made two incisions of the cheek, as in the second instance; but, at the suggestion of Dr. Campbell, I was induced to adopt the plan of the single curved incision, and found no difficulty in exposing the tumor and maxillary bone as far as its junction with the nasal bone.

Mr. Syme has claimed this curvilinear incision as an improvement of his own, in contradistinction to the double incision recommended first by Mr. Liston, and subsequently by Fergusson and Miller.

In Mott's edition of Velpeau's Operative Surgery, it is stated that "Dr. Mott had, many years before that date, (the publication of Mr. Syme's paper in 1829,) adopted the curved incision in question, in his exsections of both the upper and lower jawbones; also, Professor Velpeau was, we believe, anterior to Mr. Syme in this matter. It is inexact, therefore, for Mr. Syme to assert, that in operations, either on the upper or lower jaw, it had hitherto always seemed necessary to make a double incision, so as to permit the formation of a flap exposing the fore part of the bone."—Vol. ii, p. 733. From the above passage, it would appear that Professor Mott lays claim to the curved single incision recommended by Mr. Syme; yet, in the same volume, at page 728, we find the following sentence, in

the comments on Dr. O'Shaughnessy's cases: "In his operations on the upper jaw, we perceive that he disapproves of the extensive incisions of Mr. Liston, but, nevertheless, continues upon the erroneous plan, as Dr. Mott conceives it to be, of making his incision extend from the zygoma into the center of the commissure of the mouth, instead of the straight and single incision of Dr. Mott, from near the inner angle of the eye and along the ala of the nose, into the mouth, near the median line of the upper lip." If this latter be Dr. Mott's method, it is certainly different from Mr. Syme's, and therefore his claim to priority cannot be admitted; nor can the claim set up by M. Velpeau be supported, for the first allusion to it is made in his letter to Dr. Mott, dated Paris, August 16, 1843, and published in Mott's edition of his work, in 1847; whereas Professor Syme's paper appeared in *Cormack's Monthly Journal*, in February, 1843.

The practical point deducible from the observations of these eminent surgeons is, that it is by no means necessary to make the double incision in *all* cases; and I have no doubt that the practitioner will meet with some in which he will prefer the curvilinear incision; in others, he will deem Mott's straight incision along the side of the nose most advisable; whilst in a third class, he will find it most convenient to adopt Liston's method.*

* In claiming the discovery of the above method, and dating its origin so far back as 1829, Mr. Syme seems to forget that in the last edition of his System of Surgery, published in February, 1842, exactly one year prior to the appearance of his second paper in *Cormack's Monthly Journal*, he himself recommended *exclusively* the two incisions. These are his directions for the first stage of the operation: "In performing excision of the superior maxillary bone, *two incisions* should be made through the cheek, and extending from the inner angle of the eye directly downwards to the lip, the other beginning over the junction of the maxillary and malar bones, and terminating at the angle of the mouth." (p. 487.) If Mr. Syme really considered his plan so great an improvement as he appears to do in the papers published twelve months after the above sentence was sent before the profession, he must have acquired his experience of its merits in the interval between February, 1842, and February, 1843.

In the foregoing cases, the bones were easily divided by strong cutting pliers; and if the operator possess the requisite strength, he can, in almost every instance, dispense with all other instruments for that purpose; for the section can be performed with comparatively such rapidity, that the sufferings of the patient are thereby much diminished, and the operation completed in much less time than by any other plan. The surgeon should furnish himself with pliers of different sizes; for the malar bone and the nasal process of the superior maxillary can be cut through more conveniently with a small bone-forceps, than with that sold as "Liston's forceps."

P. S. *December* 27, 1850.—Whilst correcting the press, I have received from Dr. S. Macdonald an answer to my letter of inquiry. He states, that the subject of my first case died on the 23d of last October, one year and four months after the operation. A morbid growth commenced to form on the same side of the face, in the month of July, and rapidly increased, and gave rise to profuse discharges of pus, also to slight arterial hemorrhages.—*Brit. Amer. Med. and Phys. Jour.*

ARTICLE XX.

Periostitis of the Upper Jaw, in connection with the Habit of Biting Coin. Under the care of Mr. Stanley, St. Bartholomew's Hospital.

It is interesting to observe what serious mischief can be set up in scrofulous constitutions by slight exciting causes, and this circumstance is particularly remarkable as regards affections of bone. Intense inflammation of the periosteum is easily produced, especially in young strumous subjects, by injuries which in others would have passed unnoticed, and the severe inflammation of the investment of the bone is not unfre-

frepuently followed by either death of the osseous structure, c by that unhealthy ulceration which has been denominate caries.* These facts are well-known, but the exciting cause vary *ad infinitum*. We have lately become acquainted wit one of the latter in a patient of Mr. Stanley, of so unusual nature that we are induced to offer our readers an outline c the case.

The patient is a lad of fifteen, very short for his age, of fa complexion, slight muscular development, and bearing th marks of small-pox, who was admitted into Darker ward, unde the care of Mr. Stanley, March 7, 1850. The boy's teeth ar extremely irregular; the first bicuspid is on both sides exactl behind the canine, and the rest form a waving instead of a con tinuous line. On admission it was evident that severe inflam mation had attacked the patient's mouth, and the whole rov of teeth on the right side were so loosened that any of ther could have easily been extracted with the slightest effort of th finger and thumb. The tongue was thickly coated with a yel lowish white and moist fur, and the soft parts composing th right cheek considerably inflamed, as well as the mucous mem brane covering the hard palate. The gums were tumefied tender, of a vivid red, and largely partook of the severe inflam mation pervading the whole of the upper part of the mouth o the right side, but the mischief stopped abruptly at the mesia line. The face was swollen and flushed, the symptomati fever of a violent description, and the pain in the affected sid of the mouth extremely acute. The boy earnestly requeste that the teeth might be extracted, though it seemed rather pity to do so, since they were quite free from caries. At firs sight the case might have been taken for one of erysipelas, bu on close examination the interior of the mouth was found to b the seat of the disease, the exciting cause of which gives grea interest to the case.

* Necrosis of the upper or lower jaw is, in most cases, but not invaria bly, the effect of some local cause acting on the adjacent soft parts, an thence on the periosteum and bone.—[Mr. Stanley on Diseases of the Bone, p. 72.

It appears that the patient gains his living by selling vegetables in the streets, and he had carried on this occupation in perfect health until five days before admission, when he began to give each silver coin he received a hearty bite on the right side of the mouth, to ascertain its genuineness—a caution which he adopted as he had been imposed upon with a counterfeit shilling. He had sold on that day more than a pound's worth of vegetables, and soon afterwards noticed a certain amount of pain in the upper jaw. During the two subsequent days the pain went on increasing, but he still followed his avocation, and used his teeth as heretofore, until two days before admission, when the part became so painful that he was obliged to desist.

Mr. Stanley proceeded to extract two of the teeth; their fangs were found covered with an exceedingly vascular soft periosteum, and a probe being passed into the sockets from which the teeth had been drawn, and also between the remaining teeth and gums, it struck against denuded bone. Mr. Stanley fixed upon the opinion that the whole train of phenomena had their origin in acute inflammation of the periosteum, which might be followed by necrosis of the jaw.

The boy was ordered fomentations, purgatives, and put upon low diet. He had subsequently saline draughts and soothing applications, by which means the inflammation was soon subdued. He went on improving for several weeks; his teeth became a little firmer, but the two empty alveoli did not assume a healthy granulating appearance; they looked as if ulceration and purulent secretion were kept up in them by the structure beneath being in a state of disease.

Nothing of a very remarkable nature took place until the 29th of April, about seven weeks after admission, when, on carefully examining the mouth, Mr. Stanley found that the anterior part of both sides of the upper jaw was in a state of caries, and probably likewise of necrosis. Fistulous openings were discovered above both canine teeth; these were discharging a thin purulent fluid, and a probe introduced into them came in contact with rough bone.

Mr. Stanley gave a very unfavorable prognosis of the case; he conceived that certain portions of the jaw had, in all probability, lost their vitality, and that more or less of them would come away after a little time. It was, in the meanwhile, plain that no therapeutical assistance could be rendered, and that nothing could be done but patiently to await the time when portions of bone would be sufficiently loose to allow of removal. There was evidence, however, that the changes of the osseous structure were proceeding with activity, as the secretion of pus was at times so abundant that the purulent matter was discharged by the nose, *viâ* the posterior nares.

After the patient had been about three months in the hospital, the fistulous apertures on either side of the canine teeth became smaller, but they remained quite pervious, and secreted thin pus. The alveoli whence the teeth had been originally extracted were at the same time covered with a grey film, and showed no disposition to granulate. The patient's general health, however, did not suffer, and Mr. Stanley judged that it would be a great benefit to the boy to leave the hospital, and to show himself now and then as an out-patient. He has been seen several times up to the present date, and it is extremely likely that the process of extrusion and reparation will stretch over a considerable space of time.—*London Lancet.*

ARTICLE XXI.

On the Appearance of the Gums in Phthisis.

M. Fredricq published some observations in 1847, in which he stated that in phthisis a red streak is constantly to be found on the gums opposite the lower incisors, and sometimes the upper ones also. Since then he has paid great attention to the subject, and now says, that in the latter period of all chronic diseases, some time before death, a blue red streak will

always be found, but that in phthisis it is one of the earliest signs. In all the cases of *phthisis*, without exception, that have come under his notice, he has met with the brick-red, or blue streak. The *brick-red* color is especially found in inflammatory phthisis, or at least when much bronchial irritation and nocturnal fever are present; while the *blue* color denotes a less active form of disease, and is oftenest in those who suffer from abundant pneumorrhagia, although by no means always indicating the probability of the occurrence of this. In a few cases a *white* line, as observed by M. Vanoye, contrasts with the general color of the mucous membrane, and those who exhibit it are usually of a marked scrofulous and cachectic habit. These streaks are of great importance in announcing early phthisis, in those cases in which doubt prevails as to whether a bronchitis or catarrh is connected with tubercle. The author has never known persons suffering from bronchitis in whom this mark was absent, afterward become the subjects of phthisis; while those in whom it was distinctly present have all afterwards furnished signs of tubercle. The deeper the color, the more rapidly does the disease proceed, while it is a good sign to find it become paler. Patients, in whom the process of softening has become temporarily arrested, and who believe themselves cured, continue to offer the blue mark, but paler than before. When the disease recommences its march, the mark becomes plainer.

Dr. Bonarden states that he has observed a blue line in *intermittent fever*. M. Fredricq has generally found it wanting, and when present it has been blue, not red, and seems to be connected with engorgement of the spleen. In *chronic abdominal* affections, there is a dirty, livid-looking streak, along the whole extent of the gums, and much broader than in phthisis. So in *menstrual molimen* there is sometimes a blue line along the free edge of the gums, which disappears when the menses comes on. It is frequently, but not constantly, observed in amenorrhea.

The following are the author's conclusions: 1. The red, blue or white streak, along the incisor gums, is only of a real

semiological importance when manifested early, since it is always seen in the latter period of chronic disease. 2. It is observable as soon as the cough occurs in phthisis. 3. In aged persons, where there is retraction of the gums, it is not present. 4. Where the brick-red streak exists, it is a sure indication of tubercle; the blue one, which is common to other diseases, is also frequently so. 5. Chronic abdominal affections give rise to a livid streak along the entire gums.—M. Fredricq, *Rev. Med. Chir.*, vol. vii, pp. 139–141. From *B. & F. Med. Chir. Rev.*, Oct. 1850.

ARTICLE XXII.

Displacement of the Epiglottis. By Jas. Kitsell, Esq.

John Chillinsworth, aged 72, now an inmate of the Droitwich Union House, has, for the last six months, labored under painful difficulty of deglutition, being unable to swallow any solid food, which inconvenience occurred during violent and repeated attacks of retching and vomiting. On examination, the epiglottis may be readily seen projecting upwards at the base of the tongue, as though it was almost detached from its connection with the glottis. In consequence of the patient's advanced age, peculiar idiosyncrasy, and irritable temperament, no attempt has been made to replace the epiglottis, especially as the spasmodic symptoms are much abated, although any attempt to swallow solid food produces spasmodic affection of the part, whereby it is forcibly rejected, but the parts have in a great measure adapted themselves to the inconvenience, and he can swallow liquids tolerably well. In the event of death, I hope to avail myself of a *post-mortem* examination to ascertain the real cause of this displacement.—*Prov. Med. & Surg. Jour.*

On stone by A. Newsam

Lith. of P.S. Duval, Philad.

From an original picture by Vanderlyn.

Your very obedient Servant

Jas. Gardette

BIOGRAPHICAL DEPARTMENT.

Biographical Notice of the late JAMES GARDETTE, *Surgeon Dentist, of Philadelphia.* By EMILE B. GARDETTE, M. D., Dentist.

JAMES GARDETTE, Surgeon Dentist, was the second son of *Jean Blaize* Gardette, and was born 13th of August, 1756, in the town of *Agen*, *département de Lot et Garonne*, France. His father died when James was quite a lad, and we are but little acquainted with this early period of his life; nor, indeed, does it enter into the plan for the performance of our task. We only know that he possessed a very trifling patrimony, insufficient for his maintenance or education, and that after his father's death he was brought up by his paternal uncle, *Blaize* Gardette, who lived at Agen, and held the office of prosecuting attorney until an advanced age. His uncle designed James for the medical profession, and with that view, after the ordinary academical studies of that day in a provincial town of France, sent him to Paris. He remained at the capital about two years, (from 1773 to 1775,) pursuing the study of anatomy and surgery in the Royal Medical School; and thence he was removed to the Hospital at *Toulouse*, where he resided eighteen months, as a pupil in the institution. At the end of this period he was sent to *Bayonne*, and there was examined by the surgeons of the Admiralty, and commissioned as a surgeon in the French navy.

We are not aware whether this first step in life, or the more important one that immediately followed it, met the approbation of the good old uncle at *Agen;* but the probability is that they were the voluntary independent movements of the young and more ambitious nephew. For we find that immediately on obtaining the commission in the navy, he received orders to embark, in his professional capacity, on board the brig of war

La Barquaize de St. Jean de Luz, destined for Boston, Massachusetts. He sailed in October, 1777, and arrived at Plymouth early in January following.

The love of liberty and popular movement throughout France, which brought so many young Frenchmen to the United States at the period of our "Declaration of Independence," had no small influence in governing the course of Mr. Gardette. He made a cruise of four months, during which an engagement occurred with two British ships, lasting three hours and a half, and in which there were several killed and wounded on board the vessel of which he was the surgeon. This seems to have terminated his official duties and connection with the French navy, from which he resigned, intending to adopt this country as his home. When the French fleet and army arrived at Newport, he was induced to visit that town, and commence practice as a dentist, the officers affording him congenial and considerable occupation for a short time. He had received instructions in dental operations, (as part of his profession of naval surgeon,) from Mr. Le Roy de la Faudinière, a dentist at Paris, then in high repute. He had also provided himself with the best works extant, (Fauchard and Bourdet,) on the teeth, and with a limited set of dental instruments: still we scarcely think he could have had any expectations of pursuing the profession of dentist in this country at the time he left France.

He returned to Boston from Newport, and in the autumn of 1783, we find, went to New York. He was there when the American army, under General Knox, took possession of the city—an inactive but not indifferent spectator of the great events of that interesting epoch in American history.

It is worthy of remark, (and the thought may not be out of place here,) that the French emigrants who selected this as the country of their adoption, from sympathy with its institutions, have proved to be both useful and creditable citizens: they rarely, if ever, sought to fill public offices, or to meddle with politics beyond the fair expression of their sentiments, and the conscientious exercise of the elective franchise when justly entitled to it.

As a class, the French naturalized citizens have afforded strikingly correct examples of temperance and propriety—an upright, unobtrusive and industrious population, which we think, and may be permitted to say, has not been duly or justly estimated in a public or political sense. The first cause that operates towards this result is, no doubt, the fact of not speaking the language of the country, and, even when acquired for all useful purposes, the pronunciation, in most cases, cannot be overcome; and thus Frenchmen of learning and high integrity of character, after long residence among us, have not commanded the general respect and influence to which they were justly entitled.

Mr. Gardette's professional success as a dentist in New York seems to have been comparatively small, and his limited knowledge of the English language was, as yet, a great impediment to making himself known or appreciated as he desired. It was not until the summer of 1784, and in Philadelphia, that he attained the position which determined his permanent residence in the United States. The pleasant and successful character of his occupation among the best class of citizens in Philadelphia, at the period when Fourth street was its western boundary, needs, perhaps, no stronger comment than the fact that *he continued there, in excellent uninterrupted practice as a dentist, from* 1784 *to* 1830—*a period of forty-six years!**

* In Mr. E. Parmly's Appendix to "Dentalogia," a Poem by Mr. S. Brown, we find a republication of an Obituary Notice of the late Dr. Ed. Hudson, dentist, which originally appeared in a city newspaper, under the signature of "A Surgeon Dentist," and which, Mr. Parmly tells us, is from the pen of Dr. S. S. Fitch. We feel that it would be an act of injustice to the professional character of James Gardette, to omit noticing here an article calculated to mislead the reader and disguise the truth; deriving importance chiefly, it is true, from having obtained space in a volume which bears the name of so distinguished a dentist and estimable a man as Mr. E. Parmly.

Extract from the "Appendix."—"When he, (Dr. Hudson,) commenced his practice here, he found the profession, generally, at a *very low ebb*—usually exercised by mechanics. Those great principles which elevate dental surgery from an art to a science were *almost entirely overlooked or*

Among the eminent physicians of that period, Drs. Wistar, Shippen, Kuhn and Rush, befriended and encouraged him by such aid and courtesy as were due to his correct professional views, and his education and manners as a gentleman—characteristics which, we may safely conclude, were not very commonly found among the *soi-disant* dentists of our country at that remote day. Mr. Gardette devoted himself attentively to the pursuit and improvement of his profession, and acquired no unenviable reputation for knowledge and skill in its various departments.

The difficulties which the dentist then had to contend with were manifold: he was dependent chiefly upon his own judgment and inventive genius for his success, and that, too, for the benefit of patients who, in many instances, had but little confidence in the operations of dentistry. Instruments were very defective, and not to be had in this country; and even the ma-

unknown. To *remove this mass of rubbish*, to obliterate bitter and widely extended prejudices, was the task of Dr. Hudson," &c., &c.

Other passages are scarcely less objectionable on the score of impartial truth—for Dr. S. S. Fitch cannot well have been ignorant that when Dr. Hudson commenced his practice here in Philadelphia, (about 1805–6,) *he had never to any extent practiced anywhere else;* and that Mr. Gardette had already, as a practitioner of about twenty years' standing, acquired and deserved a high reputation for science and skill in his profession. Dr. Hudson himself was among those who acknowledged and honored that reputation, and in cases of doubt, in his own early practice, he sought the benefit of Mr. Gardette's experience. It would have been but a slight effort of justice and truth to have excluded Mr. Gardette from the "*mass of rubbish*" which it became the task of Dr. Hudson to clear away; and to have extended the same just exception in reference to the "very low ebb" at which the profession stood in Philadelphia "when Dr. Hudson commenced practice here." The exalted professional position ascribed to Dr. Hudson was justly his due at a later period of his life, when he attained merited distinction, spite of accumulated "rubbish:" we are ready and glad to name him as among the best educated and most successful dentists of modern times.

Had Dr. S. S. Fitch's article possessed no other than the passing existence afforded by a newspaper, it had probably never claimed notice here, but been allowed all the honor that belongs to *undeserved and uncontradicted misrepresentation.*

terials which were recognized as appropriate for professional use could not be obtained short of Paris or London. Among the improvements introduced into the practice of dental surgery by Mr. Gardette, whether in the way of instruments or operations, some few, at least, have been identified with his name; and we cannot better show the estimate placed upon them than by the following extract from the Minutes of the "*John Scott Legacy for the Encouragement of Useful Inventions in the Arts and Sciences.*"

"1822—To James Gardette, dentist, for three mechanical improvements in his profession, which are highly commended in Europe and in the United states; and for a simple lever instrument for the easy and expeditious extraction of teeth and stumps of teeth, awarded a medal 'to the most deserving,' and twenty dollars."

The above "award of merit" is the highest permitted by the will of John Scott, who left the fund, (secured, we believe, to the city in trust,) for the objects specified.

This brief, and, (as regards the nature of the "mechanical improvement,") unsatisfactory account is all we are able to discover from the archives transferred into the hands of the Franklin Institute. But we think we can enumerate most of the inventions which the profession owes to Mr. Gardette, without injustice to others.

He was the first dentist who substituted the use of elastic flat gold bands or braces, in the place of ligatures of silk or fine gold wire, for securing artificial teeth when attached to the living ones.*

* Mr. L. Laforgue, a distinguished dentist and writer of Paris, says, in his "*Théorie et Pratique de l'Art du Dentiste,*" 2d edition, 1810, p. 20—

Translation.—"The plan of maintaining artificial teeth by means of ligatures is almost entirely done away with by Gardette of Philadelphia: he secures artificial pieces without tying them, even when of limited extent. I have seen such admirably secured, and am acquainted with no dentist who equals him in this beautiful and valuable description of work."

In pp. 257–294, Laforgue refers to the invention of gold mortise plates, for mounting artificial teeth, as due to Gardette, of Philadelphia.

He invented the manner of mounting natural teeth, which consists of a gold mortise plate, to which the teeth are secured by means of gold pins, and which permits the *tooth* to rest upon the gum instead of the gold plate.

He was the first to apply the principle of *suction* or *atmospheric pressure** for the support of entire sets of artificial teeth, dispensing with the use of spiral springs and the endless contrivances then in use, much to the inconvenience of those who wore them.

Nor were his improvements less important in the cure of diseases to which the teeth and gums are liable: he was the early advocate, if not the first who recognized the wisdom, of affording space for the healthy and good arrangement of the teeth by judicious extractions in youth. He believed, and his

*It is a well-authenticated fact, that Mr. Gardette successfully maintained sets of artificial teeth for the upper jaw, on the principle of atmospheric pressure, as early as 1800.

We have heard him relate the following anecdote of the chance which led to this important discovery. He had furnished, for the second time, an entire set of upper teeth, (enameled hipp$^{s}_{..}$,) for Mrs. A. M'C., and owing to the short time the first set had lasted, under the action of the saliva, he suggested that this set should be left much heavier. In order that the tongue should become accustomed to this increased bulk, necessarily contracting the limits for its free movements, the lady was desired to keep the new piece in her mouth as much as possible, during a few weeks, but not expecting her to use it for purposes of mastication or speech until the usual springs should be attached to it. Mr. G. promised, at the end of the period named, to call and arrange the piece for permanent use.

It was then still the custom for the dentist to attend at the houses of his patients, and a busy season caused months instead of weeks to elapse, when Mr. Gardette called again: with an apology for neglect, his plyers and springs ready, he requtrted Mrs. M'C. to bring the artificial pieces. She replied, "I have them in my mouth," much to the astonishment of her dentist, with whom she had been conversing with her usual facility. She stated that at first they were a little troublesome, but she had become accustomed to them now, and they answered every purpose as well *without* as *with* springs, and she was glad to dispense with them. The principle upon which the artificial piece thus adhered to the gum, at once suggested itself to his mind, and suction, or atmospheric pressure, was henceforth depended upon in numerous cases of the same kind.

long experience proved, that he thus obviated a great cause of decay, arising from lateral pressure, when the circle of the jaw is too narrow for the number and size of the teeth to permit their regular and easy arrangement.

He was one of the earliest dentists who adopted *gold foil*, instead of *lead* or *tin*, as the best material for filling teeth; and related often that he had at one period prepared gold foil for his own use from Dutch ducats, when no gold-beater was to be found in this country, or none, at any rate, who could furnish dentist's filling gold.

As an *operator*, Mr. Gardette displayed great judgment, care and dexterity, while he exhibited no misplaced or morbid sensibility inconsistent with the best performance of his painful professional duties.

In the mechanical departments of his art, his work evinced discrimination and good taste, as well as originality: his artificial pieces, at a period when no aid was to be derived from "*dental laboratories*," possessed all the good workmanship and finish which are the result of mechanical skill and patient industry.

His practice was characterized by the one strong motive of *good to his patient*, and not less by the liberal and benevolent feelings which should govern professional life.

His want of familiarity with the English language seems to have made him diffident about publishing his views or improvements in his profession; and it was not until 1827 that he was induced by his friend, the late Dr. James Mease, (a liberal and warm friend of the arts and sciences,) to furnish an article for the "Medical Recorder," on the "Transplantation of the Human Teeth;" the first, and, we believe, the only publication that bears his name. This paper, occupying seven pages of the periodical referred to, (January, 1827,) goes to show the impracticability and injudicious character of the operation, and exhibits a sound and sensible theory, with some original suggestions.

As a practicing dentist, the usefulness of Mr. Gardette was much impaired, during the latter years of his life, by continued

and severe suffering from the gout. He had long cherished a desire to return to France, and end his days in his native country, but owing to unfortunate investments and various disappointments, this favorite plan was not accomplished until the year 1829, at the age of seventy-three, too late to realize the pleasant anticipations he had so long connected with such a step. His native village of Agen, which he revisited, was no longer what it had seemed to his longing heart, during an absence of half a century: he took up his residence at Bordeaux, where he did not attain his expected contentment, and had already, in his letters, expressed thoughts of returning to this country. But before any such design could be carried out, he was attacked by his old enemy, the gout, and died in August, 1831.

BIBLIOGRAPHICAL DEPARTMENT.

A Much Less Painful and More Scientific Method of Extracting Teeth. By H. Gilbert, M. R. C. S. L., &c. &c. Carroll Minter: London, pp. 67.

Such is the title of this *very* small pamphlet, written, published and distributed by the inventor of the new dental operating chair, a notice of which we gave in a previous number of this Journal. Possibly some of our readers, like ourselves, may expect to find this work a wonder, and its author a prodigy: if so, their expectations will not be realized by a perusal of the essay. In his preface, the author says, (the italics are our own,)

"The operation for extracting teeth, when effected with instruments duly adapted for its ready and safe performance, and by a person fully acquainted with the anatomy and physiology of the parts to be operated on, is unattended with any danger or risk, and with much less pain than is usually supposed. Yet how few *medical men do extract teeth!* Surgeons who would not shrink from performing the most difficult and painful operations, hesitate, and are very unwilling to practice one in reality so simple, and unattended with danger. And why? Because they have no *confidence in the instruments at present in use;* their *knowledge* of physiolo

gy and the principles of mechanics teaches them that they are not adapted for the purpose for which they are intended, and they dread the occurrence of one of the following accidents, any one or all of which may happen, without their being able to prevent it, while at the same time its occurrence would assuredly greatly damage their reputation:—breaking the tooth, fracturing the jaw, lacerating and crushing the gums, and frequent slipping of the instrument, requiring repeated readjustment, especially when the key is used. This last named accident is by no means a trifle, on account of the severe pain it causes, and the intensity of the inflammation which may be set up in consequence. To remedy this has been the object of my labors, the result being the invention of the PATENT FULCRUM AND CHAIR, described in the latter part of my little book. This I have used, and still use, with much success; it has also been employed with *equal benefit by those gentlemen who have purchased licenses from me under the patent.* It will be found to obviate most, if not all, the disadvantages and difficulties at present met with in the performance of this operation, whether the key, forceps or elevator be used; at the same time it lessens the pain usually felt during extraction, diminishes the risk of hemorrhage, &c."

Upon what grounds, we ask, does Mr. Gilbert make this sweeping assertion, that the instruments now generally employed for extraction are in their use attended with the awful results he speaks of? If he means that the majority of *his* professional brethren are practically ignorant of the knowledge and existence of the improved instruments used for this purpose, we readily admit the truthfulness of his remarks. If Mr. Gilbert and his medical brethren have been bungling on with grandpapa's sharked jaw forceps and antediluvian keys and punches, with their elevated notions of physiology and the principles of mechanics to guide them in their practice, it does strike us as marvellously strange that *their knowledge* of mechanics should not have helped them to the construction of suitable instruments, and not to avoid operations on account of the inapplicability of those in use—we presume amongst themselves.

Our author further on observes, in reference to the requisite amount of knowledge necessary for the dentist, "All must acknowledge the necessity for an accurate knowledge of the principles of mechanics, as well as of anatomy and physiology, as far, at least, as regards the teeth and their sockets, if they call to mind the difference in the formation of the crowns of the respective teeth, and also in the degree of *divergence* of their fangs, and their direction. The relative strength, too, of the walls or parietes of the sockets must be taken into account." With the preceding observations we perfectly agree: nay, more; in our opinion, to practice the art of dentistry efficiently, one should be acquainted with the collateral branches of medicine, surgery, pathology, mechanics, &c., &c. Yet, even with a knowledge of these sciences, the practitioner will often find cases that will perplex and annoy him in practice.

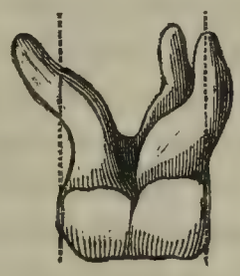
Mr. Gilbert, to illustrate more forcibly the superiority of his mode of operating over any other, quotes the opinion of several leading authors as to the modus operandi of using the various extracting instruments: one, in particular, he endeavors, by a strange physiological error on his part, to pervert the proper meaning of; we will, however, give the quotation in question. Robinson, in his work when giving directions for the use of the key instrument, says, "for dilating the corresponding portion of the socket, which, by its lateral enlargement," &c. Mr. Gilbert, in his commentary upon this passage, remarks: "If this passage be fairly translated, instead of reading 'dilating the corresponding portion of the socket, which, by its lateral enlargement,'—we should say, *fracturing* the walls of the socket, which, by its *giving way*—as it is utterly impossible for *bone to dilate*, even under the amount of force applied during the use of the key instrument." Surely our perpendicular author must have forgotten the major portion of his physiology of bone, when he wrote these remarks, for if we remember correctly, and daily experience during our pupilage, both upon a dried skull and a recently dead subject, furnished convincing proofs that bone *will dilate*, where force is applied, even in the latter; whilst in the former, either the crown or fangs of a tooth are broken in any attempt, (even perpendicular,) to remove it from its socket. Moreover, how is it, we ask, that the upper molars are removed, if the socket do not dilate? do not the apices of their roots extend over a larger surface than the neck, which is embraced by the alveolus? if so, in every such case, according to Mr. Gilbert's doctrine, either the alveolus is fractured or the roots broken off. Every dental practitioner's daily experience upon the living subject will furnish convincing proofs that Mr. Gilbert's physiological knowledge must be extremely limited, when he ventured to propagate such an absurd doctrine, that *living bone will not yield to pressure without fracturing*.

A friend of the writer of this notice has seen Mr. Gilbert operate, and feels convinced it offers no improvement to our already known appliances for the extraction of teeth; and with this disadvantage—it requires more time in the adjustment of the fulcrum upon which the instrument rests in each particular case; and when properly arranged, and the operation commenced, the remaining teeth in the jaw are forcibly drawn in contact with the fulcrum, which must unquestionably cause serious mechanical injury to the teeth and alveolar periosteum. Independently of these disadvantages, the mere sight of the chair and fulcrum is sufficient to deter nine hundred and ninety-nine patients out of a thousand, from availing themselves of its *peculiar* advantages.

The cases cited by Mr. Gilbert to prove its superiority over the usual method, we think, are mere clap-traps, and do not in the least establish a practical fact—for the most of them had been under the hands of surgeons and hospital pupils, and the one Mr. G. considers his trump card, viz. *Lieut. Cotton's* case, several days had elapsed after the first attempt, and

here we may suppose that suppuration had done much in raising the tooth from its socket, which enabled Mr. Gilbert to remove it so dexterously.

After setting forth the peculiar advantages of the fulcrum over the common method of operating, the patentee says: "The teeth are extracted *perpendicularly*, or in the line of their axis." We do not clearly understand Mr. Gilbert's sayings and doings, for our friend personally saw Mr. G. operate on a lower molar of quite the usual character, after the right adjustment of the external fulcrum, and he observed that *lateral before perpendicular* motion was given, quite as much as is usual when the forceps are used in the ordinary manner. This Mr. Gilbert said was necessary to *detach* the tooth *from its periosteum.* This is what we should say is the ordinary method of abducting a tooth, which requires no inordinary machinery in the shape of fulcrums to accomplish. And as the patentee positively asserts that all his extractions are done by the *perpendicular action*, we feel curious to know how he would meet the two following cases—



a dens sapientiæ and an upper molar—according to his *fixed* principle of operating: the straight lines in the diagram indicate the perpendicular action. It may be said we have purposely selected isolated cases: not so; any dental practitioner, of any practice or experience in his profession, will bear us out in our remarks, that similar cases to the above are frequently occurring; or, if further proof be wanting, let the dental apparatus of a prepared human skull be examined, and we much question whether Mr. G's theory of perpendicular extraction will not be found to be a mere flash in the pan, as regards its practical utility in the extraction of teeth.

We moreover advise Mr. Gilbert, when next he goes to press, to rewrite the quotation which has reference to perpendicular extraction, for the sake of consistency, and a due regard to the respectability of the profession of which he is ambitious to be considered a member.

In concluding these observations, we think Mr. G. has manifested considerable ingenuity in a *theoretical* point of view; but, as we before observed, for real practical utility to the dental profession, we consider his invention worse than useless, and we are borne out in these remarks, by the invention itself being laid aside by those who were induced by the novelty to purchase the right of patent for certain towns—a report of which we will give on some future occasion. R.

On Tic Douloureux and other Painful Affections of the Nerves, with Suggestions for their Treatment by means of the Aneuralgicon. By Toogood Downing, M. D. London: Churchill, 1849, pp. 73.

The author of this work is well known as a contributor to medical science, in the various periodicals in England; and the substance of his present production originally appeared in the columns of the *Lancet*. Dr. Downing says, that by means of an ingenious instrument he has constructed, he is enabled, by local treatment in the form of vapor, to give relief in most cases, and in many to cure. By means of the apparatus, the vapor from belladonna, henbane, cannabis indica, and other narcotic plants—the neuralgic organs are douched with a jet of vapor strongly impregnated with the above.

True tic douloureux is a constitutional disorder, and any means that can be had recourse to, to alleviate the intolerable sufferings, is of the utmost importance; at the same time, we cannot avoid mentioning that hundreds of cases are annually treated as constitutional, where an examination of the dental organs has at once suggested the true cause of suffering. Unfortunately for the public, medical men have little or no knowledge of the diseases of the teeth—hence their overlooking the exciting causes of pain. We, however, recommend this mode of applying the remedies, and should it, in other hands, be found to equal in its effects the results detailed in the Doctor's little work, he will have done good service to his fellow creatures. R.

A few Practical Observations on Diet, especially that of Children and Invalids, with Inquiry into the Effects of Alcohol on the System. By Charles Beckett, M. R. C. S. London: pamphlet, pp. 17.

This little treatise is much too brief. Upon a subject of so much imporance, we could have wished Mr. Beckett to have extended his inquiries, and produced a work worthy of his talents. We extract from it the following passages:

"It evidently never was intended that children which have not cut their teeth, should be furnished with food requiring mastication. Yet how constantly do we see them supplied with portions of meat, pastry, and other, (to them,) indigestible substances, in direct violation of this plain law. The result is, that instead of premature development of strength, we have irritation of the lining membrane of the stomach and bowels, which induces diarrhea, and may result in the more formidable evils of convulsions or atrophy. The difficulty of getting parents to attend to simplicity of diet in children under five years of age, is a fertile source of disappointment to the practitioner, as well as of atrophy, marasmus and infantile remittent fever, all fatal forms of disease to the child. This foolish system of indulgence

extends to the lowest ranks of society, and seems often to be the most practiced where it is likely to be the most injurious."—pp. 6, 7.

"In the management of infants, it is as cruel as it is unwise, to depend *mainly* upon aliments which are chemically incapable of affording adequate nutrition. Sago, for instance, as an article of diet for children, is, *where relied upon*, most objectionable. I have seen several cases of the unhealthy fattening of children, followed by extreme emaciation, difficult dentition, and even where worse consequences have apparently arisen from this cause. We shall find sago to be one of those compounds incapable of organization, from its chemical constitution; and, moreover, being deficient in salts of lime, it will not afford the requisite supply for the growth of the bones, and development of the teeth—thus directly tending to induce rickets and tardy dentition. No wonder, then, that it fails to supply the place of homelier food." J. R.

A Practical Treatise on Dental Medicine: being a Compendium of Medical Science as connected with the Study of Dental Surgery. By Thos. E. Bond, A. M., M. D., Professor of Special Pathology and Therapeutics in the Baltimore College of Dental Surgery. 8vo., pp. 324. Philadelphia: Lindsay & Blakiston, 1851.

Until within the last few years, dental surgery was almost universally regarded as a mere mechanical art—as having no connection whatever with general medicine, and as requiring only a very small amount of manual dexterity for its successful practice. Hence the duties of the profession, as might have been supposed, were, for the most part, exercised in the rudest and most bungling manner. With few exceptions, the teeth were treated as isolated, inorganic bodies—as having neither anatomical, physiological nor pathological relationships with other parts of the body. But, under the influence of more liberal and enlightened views, dentistry has rapidly advanced from this humble and lamentable position, until it is now regarded as an important branch of the curative art; and that for the successful practice of which, as thorough a training is required as for the practice of any other specialty of medicine. The connecting link between it and general medicine, however, has, up to the present time, been wanting. But this is now supplied, and if not as fully as could have been desired, yet in a manner that must be highly gratifying both to the members of the medical and dental professions.

The work of Professor Bond opens a new era in the history of dental surgery, pointing out, as it does, the pathological relationship between diseased teeth and other parts of the body, it demonstrates, in the fullest and most conclusive manner, the importance and absolute necessity of a thorough knowledge of *anatomy, physiology, pathology* and *therapeutics*, to the dentist.

Indeed, we regard the book as indispensable, both to the student and practitioner of dental surgery; and it may be read with equal profit by the physician. It embodies, and within narrow limits, a large amount of valuable information, embracing etiology; symptoms of disease; diagnosis; treatment of disease; nature of disease; ulcers, depending both upon local and constitutional causes; tumors; diseases of the teeth and face, dependent upon morbid conditions, either general or of other parts; morbid secretions of the mouth; morbid effects of conditions of the teeth, and the parts immediately connected with them, upon the general system; morbid effects of first dentition; sympathetic diseases of dentition; effects of diseased teeth and gums upon the general health; wounds of the mouth and face; particular affections of the mouth and adjacent parts; diseases of the lips; diseases of the glands and gland ducts; tumors requiring amputation of a part or of the whole of the upper jaw; amputation of the lower jaw; diseases of the antrum, and diseases of the palate.

As a literary production, the work is highly creditable to the accomplished author; and as a contribution to the science of dental surgery, it is certainly invaluable.

The Medical Student's Guide in Extracting Teeth: with Numerous Cases in the Surgical Branch of Dentistry. With Illustrations. By S. S. Hornor, Practical Dentist. 12mo., pp. 76. Philadelphia: Lindsay & Blakiston, 1851.

After a few introductory remarks, the author of the above work commences with a defence of the key instrument, which, after "all others fail," seems to constitute the "*anchor*" of *his* "hopes." That a professed dentist should award so high a meed of praise to an instrument which has been almost wholly laid aside by nearly all good operators, may appear somewhat strange, and at first we were not a little surprised; but after reading a description of the other instruments which he recommends, and the directions laid down in the work for the performance of the operation in question, we do not wonder that he entertains so favorable an opinion of "this much abused" instrument. All the accidents that have occurred with it, he seems to attribute to its injudicious use, and does not, therefore, regard them as constituting any argument against its employment.

With a view of strengthening the position he has assumed in relation to the value of the key, he institutes the following bold comparison: "Because thousands of lives have been lost by the application of steam, through ignorance or negligence of the engineer, and the imperfections of the machinery, yet I am not convinced of the policy of its abandonment." Now, if a safer and equally efficient motive power could be obtained, and at no greater cost, we apprehend that our author would be convinced of

the wisdom and propriety of abandoning the use of steam. In the extraction of teeth, we have instruments, in our opinion, that may be used with more efficacy and greater certainty of success, and which, as the author admits, "cause less pain than the key." Why, then, should we resort to "this much abused instrument?" We believe that no good reason can be assigned for doing it, and those who have attempted it, have only done so by assuming, in the face of well attested facts, and the most ample and enlightened experience, the converse of the proposition. If it were necessary, we could cite fifty instances where teeth have been extracted with forceps, after unsuccessful attempts to remove them with the key had been made, and by individuals who are regarded as skillful in the use of the last named instrument.

For the extraction of the upper central incisors, the author recommends the use of straight forceps, and after applying them, directs the force to be outward and inward, and afterwards perpendicular, using the precaution, to prevent the instrument from slipping, of not applying the force too suddenly. By combining with these movements a rotary motion, the removal of the tooth will be considerably facilitated. But when the crowns of these teeth are very much weakened, or the roots only remain, "the key," says the author, "may generally be used to advantage," using a very narrow claw, with a short round fulcrum. In some cases, where the root has become hollow and thin from decay or drilling, the instruments which he mentions for their removal are the key, the screw, the elevator, the punch and the hook; but in a case of this sort, the conical screw, or what is vastly preferable, Dr. Hullihen's compound screw forceps, is the best instrument that can be employed. With this instrument the root may always be extracted at once, provided the decomposed portions are first removed with a suitably shaped instrument. We do not regard the key, elevator, punch or hook, as being at all adapted to the removal of the root of an upper incisor.

The directions for the removal of the other teeth, though perhaps not quite as objectionable, are, in our estimation, more or less faulty and imperfect. But on the operation, altogether, only about sixteen pages of the work are devoted.

The author next treats very briefly on the occurrence of excessive hemorrhage after the extraction of teeth; after which the "symptoms indicating the necessity" for the operation, are noticed. These include many of the morbid conditions to which the teeth are liable, and many of the effects to which they give rise. In this part of the work, a number of highly interesting cases are introduced. But in the course of his observations on the indications for the operation, the author says: "If the tooth is broken in the attempt to extract it, the operator should never allow his patient to suffer until the nerve suppurates, but should surely destroy it by means of the preparation before mentioned," (arsenious acid, sulph.

morph. and kreosote,) "which will prevent the pain which is generally the consequence of a lacerated nerve, and arrest the serious effects which might otherwise be produced by leaving a root in the jaw." Instead of all this painful, temporising treatment, the proper method of procedure, in a case of this sort, would be, the immediate removal of the remaining portions of the tooth.

Review of Chemistry for Students, adapted to the Courses as taught in the Principal Medical Schools of the United States. By Jno. G. Murphy, M. D. Philadelphia: Lindsay & Blakiston, 1851.

This is a neat little compendium of chemistry, which may be very useful to the student, in enabling him to keep up with lectures, and fix in his mind the teachings of the Professor. Chemistry has become an extensive and laborious study, and such books as this by Dr. Murphy are absolutely necessary for the medical student, who can devote comparatively little time to this particular branch of medical inquiry. Dentists who may wish to acquire a proper knowledge of chemisty, and others of them who may desire to revise their knowledge of this interesting science, will find a proper text book in this work.

Ether and Chloroform: their Employment in Surgery, Dentistry, Midwifery, Therapeutics, &c. By J. F. B. Flagg, M D., Surgeon Dentist, Member of the Rhode Island Medical Society. Philadelphia: Lindsay & Blakiston, 12mo., pp. 189, 1851.

The above beautifully gotten up work contains a great deal of interesting information with regard to the anæsthetic effects of ether and chloroform; and to those who are desirous of administering agents of this sort, it may be consulted with advantage. In the practice of surgery and obstetrics they have been extensively used, and, very generally, with the most happy and gratifying results; but in dentistry they have been less frequently employed.

An Inaugural Essay on Zoo-Adynamia. Presented for the Degree of Doctor of Medicine, in the University of Pennsylvania, by Geo. J. Zeigler, M. D. Published upon the recommendation of Prof. S. Jackson. Philadelphia: Lippincott, Grambo & Co., 1851.

The above essay is evidently the result of some thought and research, containing, as it does, valuable and interesting information on the subject of the nervous system.

A Treatise on the Diseases and Surgical Operations of the Mouth and Parts Adjacent: with Notes of Interesting Cases, Ancient and Modern. By M. Jourdain, Dentist, and Member of the College of Surgery. Translated from the last French edition. Philadelphia: Lindsay & Blakiston, 1851.

For this addition to American medical literature, we are indebted to Dr. Philip H. Austen, of this city, whose unreasonable modesty has prevented the appearance of his name upon the title page. If the writer of a good book lays his readers under an enduring obligation, the translator, who takes it from the literature of one people and incorporates it into that of another, making it available to multitudes who, without his aid, would have been nothing the better for its existence, is certainly worthy of commendation and gratitude. The measure of approbation must be found in the value of the literary gift, and that is made up of the importance of the original and the excellence of the translation. Judged thus, Dr. Austen has bestowed upon American surgeons, and particularly upon surgeon dentists, a most useful gift. The original work is exceedingly valuable, and his translation of it remarkably well done. The Baltimore College of Dental Surgery may be proud of a pupil who has commenced his career by such a contribution to the literature of the profession.

The translator began the work with the intention of adapting it, by suitable additions and corrections, to the present wants of the dental profession, and this design he carried out through the first hundred pages; but finding that the necessary additions would swell the book beyond a prudent size, he abandoned this part of the plan.

This is much to be regretted, for the additions thus partially made, are of such a character as to warrant the assurance that the whole work would have been greatly improved by persevering in the plan originally contemplated.

Of Jourdain's work it would be unnecessary to express an opinion, had not its foreign vesture hitherto hidden it from most of those who have sought information in this department of medical science. It is an old work—having been written about seventy years ago—yet it has never been, and, in many respects, never can be, superseded by another. In view of the low state of dentistry at the time of Jourdain, the production of such a book as his is wonderful; yet it is more wonderful that its publication did not lead at once to a higher appreciation of the dental art, and more diligent devotion to its improvement.

Jourdain at first studied general surgery with great diligence, but becoming embarrassed with the multitude of subjects embraced in manual medicine, he resolved to confine his business to the treatment of maladies of the mouth and adjacent parts. In order to acquire skill in this specialty, he read carefully all that had been written upon the subject; obtained all

the information he could from living surgeons, and added to all the knowledge thus procured, the results of long and patient and widely spread observation.

This work contains, within a brief space, the aggregate of all his knowledge upon these subjects; and a wonderful aggregate it is. Making due allowances for the improvements in pathology and therapeutics made since the time in which he wrote, Jourdain's work is as useful now as it ever was, and every surgeon in the country would be well repaid for reading it. To the dental surgeon it is particularly valuable, and to such we earnestly recommend it. Dentistry, as yet, can boast of few books, but they are, for the most part good: let them be well studied, and none more closely and generally than Jourdain's.

A Systematic Treatise, Historical, Etiological and Practical, on the Principal Diseases of the Interior Valley of North America, as they appear in the Caucasian, African, Indian and Esquimaux Varieties of its Population. By Daniel Drake, M. D.

The great defect in American works on practical medicine has hitherto been the meagreness of their pages in facts essentially and practically local. It is true that American Journals embody a vast amount of this sort of information: but in systematic treatises, the aim appears rather to have been to write such works as would answer as text books for learners, than to collect and arrange those new and interesting features developed by difference of climate, position, and modes of life, and obtained only after great research and indefatigable labor. And yet no one will hesitate in awarding the higher meed of praise to works of this latter kind. The first furnishes the reader with opinions and conclusions, frequently ably drawn and executed with great force: the second supplies him with facts from which he is enabled to reason for himself. To the development of these local facts, Dr. Drake has addressed himself with all the energy peculiar to his character, and the result has been the production of a work of the greatest practical value to the medical world.

The germ of this treatise, Dr. Drake tells us in his preface, was a pamphlet, entitled "Notices concerning Cincinnati," written more than forty years since; but he set himself seriously to the task of its preparation about nine years ago, and for this purpose undertook long journeys throughout the entire interior valley of North America, in order to acquire the facts he has recorded, either from personal observation, or intercourse with medical men resident in the neighborhood described.

In setting forth upon this scientific pilgrimage, the author says "that he endeavored to leave behind him all opinions but the single one, that he who would observe correctly must have no theories to maintain or de-

stroy." The result of these observations has been the collection of a vast amount of precisely that sort of information most useful to the medical practitioner and man of science.

It is our purpose, on some future occasion, to notice this work more at large, and in the meantime we would earnestly recommend it to our readers, as a most valuable contribution to medical literature, and worthy of the high reputation of its author.

An Introductory Lecture, delivered at the Opening of the Thirty-first Session of the Medical College of Ohio, Nov. 4, 1850. By John Bell, M. D., Professor of the Theory and Practice of Medicine, &c.

The author has sustained his well earned reputation as a clear thinker and forcible writer. Such lectures as this of Dr. Bell must produce, ultimately, a good effect upon the students and promiscuous audiences who hear them. We have space only for a paragraph, but it is a good one. Oh! that it may find favor where it ought to have effect; but the age of selfishness has not yet yielded to the millennium of self-denial.

"It should be the aim of the different [several?] medical schools of the country, in a spirit of generous rivalry, to raise the standard, while increasing the means, of medical education. They must carefully reject all the expedients to swell the number of their classes, which smack of the petty and not always conscientious trafficker, rather than the elevation of true science, and the sensitiveness of refined literature. Encouragements held out to the illiterate, the unstable, and it may be the more unworthy still, to study medicine, are premiums given to ignorance and indolence. Many a good mechanic and thrifty farmer are thus lost, in making them bad doctors."

There is the unexceptionable precept, who will show the first example? We will wait ten years for an answer.

Success in the Medical Profession: An Introductory Lecture, delivered at the Massachusetts Medical College, Nov. 6, 1850. By John Ware, M. D., Hersey Professor of the Theory and Practice of Medicine in Harvard University.

This is admirable. If it did not savor of presumption, we would say Dr. Ware is a man after our own heart. His views are our views: they have always been our views; but we were beginning to fear that we were alone in our thinking. Suddenly and unexpectedly we open an unpretending pamphlet, and there stand out our own thoughts, gracefully adorned, strong, robust, majestic. There they are—what we have often thought, but ne'er so well expressed; and right glad we are to see them.

"It is too often overlooked that the final purpose of all medical study is practice." Verily, it is. *"A man may know a vast deal of the profession, and yet be a very poor practitioner."* Yes, indeed, he may know a great deal of what is supposed to be science, and somewhat too of real knowledge, and very little about sick people—and as long as the microscope receives more attention than the lancet, the evil will inerease upon us.

There is "a *distinction between a pathological* and a *therapeutical diagnosis*"—a *distinction!* yes, a distinction so wide as to create an entire difference. The one is mainly a matter of curiosity; the other, a matter of life and death. The one can be taught by professors who never had practice, and never knew how to practice; the other, by men who can cure disease. But the evil day is upon us. Woe to us that we dwell in Marcheck! Cry out, Dr. Ware, and spare not! There is need of men of common sense and uncommon nerve about this time.

Maryland Hospital for the Insane—Reports for the Year 1850.—The reports for the last year are altogether favorable. This is an admirable institution, scientifically and *benevolently* managed. It deserves the fostering care of our citizens, and for the honor of the state and the state of humanity, should be enlarged to double its already large capacity.

Pennsylvania Hospital Report for the Year 1850.—This well known Insane Asylum, under the management of Dr. Kirkbride, maintains its high reputation. It needs no commendation from us.

Proceedings of the American Philosophical Society, April, December, 1850.—Among other interesting matters, we note a letter from Dr. Kane, of the American Arctic Exploring Expedition, now engaged in searching for Sir John Franklin. We are glad to find that there is yet hope for this intrepid traveler and his party.

EDITORIAL DEPARTMENT.

Dr. Gardette *on the Propriety of Abolishing Dental Colleges, and substituting for them a Lectureship on Dentistry in each of the Medical Schools.*

We take the following article entire, from the April number for the present year, of the American Journal of Medical Sciences:

"*On the Importance of Establishing a Lectureship on Dental Surgery in Medical Colleges.* By E. B. Gardette.

"The writer, a practicing dentist of Philadelphia, begs leave respectfully to call the attention of the trustees and medical faculties of the medical schools of the United States to the propriety and advantages of establishing an adjunct professorship to the chair of surgery, in which the specialty of dental surgery may be taught to the medical student seeking knowledge in your institutions.

"In making this suggestion, he indulges the confident belief that the existence of such a chair would be no less useful to those who may be compelled to practice some branch of dental surgery, as part of their duties in general surgery, than to the smaller number who may determine to embrace that specialty as their profession.

"The writer would offer for your consideration some reflections that seem to render this proposal consistent, not only with the wants of the student of medicine and the public, but with the duty and the interests of the medical schools which may act upon this request in such form as seems most proper to their own judgment.

"It will scarcely be assumed by any trustee, and still less by any member of a medical faculty, that the profession of the dentist or its duties, are less important to mankind than any other of the specialties of surgery—whether the oculist, the aurist, or the lithotomist; and therefore it is needless to consider such a question open for debate, or requiring argument in a country, especially, where the services of good dentists have been so widely and universally needed. It being granted, then, that the science itself is of equal importance with the other departments of surgery, it is an undeniable truth that, whilst all other specialties are taught and included in the professorships of medical schools generally, the principles and practice of dental surgery have received no attention, or certainly none that would permit the graduate of medicine to feel that he was qualified for the simplest duty of the dentist.

"Such a state of things was perhaps an unavoidable evil when men could not be found who were competent to teach the principles of our science, and when there was need of a comparatively small number of dentists; and hence no such aid was then called for from the medical colleges: but at this time there would seem to be required about twenty-five hundred dentists, more or less, throughout the United States, which is sufficiently proved by the fact that about that number are believed to be engaged in the practice of the profession, after some fashion or other—good, bad, and indifferent; and to supply an increasing demand for well-educated dental surgeons, as well as to raise the standard of that profession would appear to be a matter of common interest.

"It would seem an act of inexplicable unkindness to have thus singled out the profession of dentist from among the specialties of surgery, and forced it into an attitude of independent self-protection; but a gentleman who fulfils the duties of both medical practitioner and dentist with such distinguished abilities as to be an honor to both professions, has traced truthfully the origin of the neglect of which the dentist complains. The undersigned quotes from a valedictory address to the graduating class of Baltimore College of Dental Surgery, March, 1850, when speaking of the early periods of the existence of a medical faculty:—

"'They condemned, without stint, a calling they knew not how to practice, and a practice they knew not how to improve. Such of the faculty as were learned in their profession were found always competent and fully prepared to be oculists, aurists, or lithotomists, or to devote themselves to any other branch of the profession which their interest, inclination, or talents might determine, *except* that of dental surgery. This branch seemed to require something more than medical knowledge; it required great mechanical skill—an education of the hand as well as of the head—a kind of education they had not received and knew not where to acquire, and yet affected to despise. The necessities of the community cried aloud to them for help—a help which they could not bestow. This drove many sufferers to seek dental aid out of the medical profession, and to obtain that help which mechanical genius alone could supply. At this the profession seemed mortified and chagrined, and loudly mocked at those who dared to supply their delinquencies, and united as one man in deriding the uneducated dental mechanic. They first created the necessity for an empiric, and then croaked forth their withering contempt on the creature their own ignorance had made.'

"Thus has dental surgery been left to struggle through endless impediments and difficulties, instead of being regarded as a link, however humble, in the great chain of medical science, which should with patriarchal strength and harmony foster and embrace every branch of the healing art.

"It is now believed that, among the number of medical students who attend each of the schools, there are many who would gladly devote themselves to the specialty of dental surgery, and it is from among these, and at the early age at which they generally devote themselves to medical studies, that good dentists could be formed; they should still be required to earn and receive a diploma with the title of M. D., as a guarantee of fitness to practice and a claim to confidence as dentist. Even among the number that annually graduate, either to practice medicine generally, or limiting their attendance to their own families and dependents at the South, a correct knowledge of the theory and practice of dental surgery, such as might be derived from a course of lectures, would be highly valuable. And it is believed there would not only be a direct increase of good dentists, but a desirable addition to the number of those who should be competent to determine what constitutes a good dentist.

"The establishment of separate schools for each specialty in medical science (and why should there not be for the oculist, or the aurist, as well the dentist?) would appear to be the dismembering of a great family, thereby lessening its influence for good, as well as that power which is justly derived from an *esprit de corps* subsisting in every branch of an elevated and honorable profession. In this expression of opinion as to the ultimate tendency of dental colleges, the undersigned is actuated by no unkind or invidious feelings, but, on the contrary, he gives them due credit for the efforts they have made and are making to improve the profession; and to the Baltimore College of Dental Surgery he is personally grateful

r acts of courtesy and kindness towards himself, and to the memory of s father.

"The educated dentists in the various parts of the United States are undantly numerous, it is believed, to fulfil such duties as might be signed them in each of our medical colleges. The students who now tend the dental schools would, in this event, be added to the number of atriculants in the medical classes of the country, and the need of separte institutions would cease.

"Frequent occasion for consultations between the physician, the surgeon and the dentist, has been felt by almost every practitioner of medine, as a necessary consequence of the connection and sympathy reciprolly existing between the teeth and many serious disturbances of the general health: such sympathies would naturally seem to suggest the mutual ependence between the physician, the surgeon and the dentist, and should e a good reason for some similarity and sympathy in their modes of edution. The benefits from such a state of things as the mind can readily nticipate would not rest here; medical men would sometimes, no doubt, eceive important aid from the dentist, in tracing to their true origin many seases of the head and face that now baffle their skill.

"Whatever action your medical faculty or board of trustees may see fit take in reference to these suggestions, and the object they are designed promote, the undersigned may at least respectfully urge that they would eem to demand fair and kindly consideration, as involving matters of deep oncern to the community, for whose safety and advantage all medical learng is sought, and medical colleges instituted and fostered."

For the writer of the foregoing, we entertain great personal regard, and e regret, extremely, that our sense of duty compels us to controvert his pinions, and protest against the adoption of his suggestions. If Dr. Garette were an ordinary man, wielding no greater influence than is comonly exerted by an individual member of our profession, we might have ielded to our personal feelings, and permitted his overture to the medical chools to pass without remonstrance. But such is not the case. The uthor of this, as it seems to us, suicidal proposition, is a gentleman who eservedly ranks high among us. His professional and social position ive him uncommon importance; and we are not at liberty to estimate the anger of his proceeding at its intrinsic worth. There is reason to fear, oreover, that our silence might be construed into assent in quarters here we are anxious that no such mistake shall be made.

Dr. Gardette has, by this bold and honest expression of his opinion, ompelled us to declare ours, and he will not complain that we do so as oldly and frankly as he has done.

This proposition is made at a most unfortunate time. After many years f vain endeavors on the part of a few enlightened dentists to improve the rofessional and social position of their particular specialty, by writings and rivate instructions, and attendance upon medical lectures, dental surgery as found to have settled down to a point of degradation, from which its xtrication seemed hopeless. The better class of operators shunned fel-

lowship with the rest, and in a state of sullen and fretful isolation, grieved over evils they knew not how to avert.

At this period, when all was dark and hopeless, the idea was conceived of establishing a Dental College, and professionalising dental surgery. The enterprise was undertaken by a few men, without the promise of patronage, or even the prospect of sympathy. When they began to lecture, they had two pupils; in four years they had less than a dozen—while dentists throughout the country were annually sending out hundreds of students from their offices. The truth must be told. But few, very few, of the educated class of dentists encouraged the undertaking, while very many derided it, and used all their influence to keep students away.

In the *medical profession*, from the first, the College found sympathy and active kindness, and it is only just to say, that for years the infant institution looked to physicians for aid to sustain them against the petty jealousy and covetousness of those who should have been its natural supporters.

After twelve years of endurance and toil, the institution began to show that it had within itself the elements of prosperity. A hundred graduated pupils had carried its name over the country, and demonstrated, by their skill and success, the advantages to be procured by attendance upon its instructions. The medical faculty had recognized it as a medical school, and welcomed its delegates to seats in their great annual convocation. The public congregated at its commencements, and pupils increased in its halls.

The beginning had been made. A profession of dental surgery, standing upon its own merits, respected for its own sake, had been recognized in the country. Opposition was beginning to grow weaker, and sympathy stronger, and the friends of the profession began to feel that the way up from its nadir had been opened, and that a few years would bring about a general ascent from degradation.

Just at this moment Dr. Gardette proposes to undo this work, to abandon all hope of making dental surgery anything, and to append what we can of it to medical colleges, where it would only serve as a mere whistle to allure a few more students to their halls.

The reasons which are given for this strange and startling proposition, are few and feeble; indeed, we can hardly perceive that they amount to reasons at all. Certainly Dr. Gardette should have shown that dental surgery could be taught by an adjunct professor equally well as by the five instructors who are now found necessary in a dental college. He should have shown that the likelihood of making good dentists would have been as great under the new method as the old. The kind and quality of instruction to be given should have formed at least an element in his scheme and an argument for his appeal. But of all this nothing is said. The only reason why Dr. Gardette wishes the dental profession to be abandoned, and a kind of dentalized medicine substituted, seems to be that he supposes there is degradation in the separation. In other words, he supposes

that if dentists were graduates in medicine, dentists would be more respectable. Whether this would be so, is not left to conjecture. There are in the country many medical men who are practicing dentistry. Are they more respectable than others of equal education and skill? Are there not among them many whose operations are so far below mediocrity that Dr. Gardette would scorn to call them brethren?

As to the great advantage which would be conferred upon the public by teaching medical students a little collateral dentistry, we have our doubts. A little knowledge is a dangerous thing, especially a little knowledge in wielding such formidable engines as dental instruments.

When the first dental college was about going into operation, we were waited on by three members of the faculty of one of our oldest and most respectable medical schools, and tendered such a professorship as is suggested by Dr. Gardette, but we declined it upon the ground that no purely medical institution could afford the necessary facilities for thorough practical instruction in operative and mechanical dentistry, and that, consequently, if we accepted it, we would be employed in making the worst kind of quacks—men without skill, but with acknowledged pretensions to it.

It is useless, however, to multiply words about this matter. Practically, the scheme is *impossible*, and so it will be found whenever serious arrangements begin to be made to carry it into effect.

According to Dr. Gardette's scheme, all the medical students must be thoroughly instructed in dentistry. In the first place, they will not submit to any such thing; in the next place, no adjunct professor could so instruct them, if they would. The course of medical studies in the colleges is now so extended, that with all possible diligence, students cannot find time to get through with it in the four months session, and general clamor is demanding an extension of the time. How will they find time for theoretical, and mechanical, and operative dentistry? Again, dental students are to be thoroughly instructed in all the branches of medicine. Will they consent to devote sufficient time to obstetrics and *all* the other departments of medicine to become proficient in them, knowing that they will never turn much of this information to practical use, and, consequently, will forget faster than they acquire it.

Dr. Gardette does not propose that the term of attendance upon lectures shall be increased; but he expects that an adjunct professor will be able to instruct a class of students, numbering, perhaps, five hundred, in theoretical, mechanical and operative dentistry, by devoting, we suppose—and certainly no more can be granted—an hour a day to the purpose. In four months he would lecture about a hundred times; or during a hundred hours, which being divided into working days, would give ten days entire to dentistry; in which time, all necessary information is to be imparted—

all necessary skill acquired. If we suppose the student to attend two sessions we find his dental education completed in twenty days.

Now, in the Baltimore College of Dental Surgery, there are five instructors, three of whom are required to teach the practical and mechanical branches to thirty pupils; and our calculation is, that for each additional thirty, another operative and mechanical demonstrator must be added, so that for a class as large as that ordinarily in attendance at the larger medical schools, about twenty-four teachers would be required. Moreover, in the dental college the whole of five months has been found barely sufficient for giving instruction in practical and mechanical dentistry to graduates of medical schools. One whole month previous to lectures, is devoted to mechanical and operative dentistry, and during the lecture session, the students devote five or six hours a day to the same exercises. Yet Dr. Gardette thinks that all this work can be done equally well by an adjunct professor, who shall be an attachè to a medical faculty, lecturing when they will give him an opportunity—to students when they will give him a hearing. Does Dr. G. believe that any lecturing, however excellent, would make such operators as he has seen made in a dental college? And does he not know that if the University of Pennsylvania were seriously to set themselves to work to teach their students dentistry, their whole building would not be sufficient to make the necessary operating rooms?

But we feel that these objections are too obvious to need enforcement; it is obvious that Dr. G. does not contemplate that any practical instruction in dentistry should be given in the medical colleges. How this very essential part of a dentist's education is to be got he does not suggest.

That medical faculties may be found who will undertake to teach dentistry is possible. There are few things some of them would not *promise* to do and undertake to do, if students could be lured by the novelty. But that any of them will ever enlarge their operations to such an extent as really to educate their students as dental surgeons, is to us utterly improbable. The project may find favor. Dental lecturers may be appointed by trustees and faculties who are themselves utterly unqualified to discriminate between a dentist and a quack. Students may be lured away from dental colleges—these institutions may be abandoned—mechanical dentistry may descend to the goldsmith's, and then dental surgery will have become a dishonored appendage to medicine. The young physician will regard it as a catch-penny attachment to his legitimate pursuit—to be used to fill up the vacancies of medical practice, to be a biscuit boy to his profession—an alimentary resource upon which he can rely upon a pinch. It would be easy to fill up the details of such a sketch, but our readers can do this for themselves.

In conclusion, we beg leave to remark, that the utter destruction of one profession is too much to pay for a complimentary connexion with medi-

cine. If dentistry is to be elevated, we would show a more excellent way. Instead of multiplying difficulties in the way of dental colleges let all that have love or hope for the profession go zealously to work to build them up. If half the students of dentistry now in the offices of dentists should be sent to the dental colleges, they would be able to take rank, at once, with the best of medical schools. They would increase their professorships, enlarge their buildings, increase their museums, augment their publications, and command for the service of the profession, the best talent of the country.

We have merely to add, that the plan suggested by Dr. Gardette, is not a novel one. About thirty-five years ago, the late Dr. Hayden, of Baltimore, delivered courses of lectures on dental surgery, in the University of Maryland—the experiment, however, was unsuccessful.

As we did not receive Dr. Gardette's article until the two last forms of our Journal were about being made up, we have only had time to prepare a few brief comments upon it. On a future occasion, we may examine the subject more at length.

In giving place to the foregoing remarks, we have been compelled to omit several articles which had been prepared for the present number.

Acidulated Tooth Powders—Our attention has been frequently called to advertisements of "tooth powders," for whitening, beautifying and preserving the teeth, and we have found that nearly all the dentifrices thus advertised, which we have examined, contained more or less tartaric acid, which, according to the tables of elective attraction, has a stronger affinity for the lime of the teeth than the phosphoric with which it is combined, and, consequently, must exert a most destructive action upon these organs. A powder having this acid for its base, will, for a time, unquestionably, "whiten" and "beautify" the teeth; but it will also, if used for a considerable length of time, as certainly cause their destruction and eventual discoloration. The sale of such an article can only be effected but for a short time, as their pernicious influences exhibit themselves, and, of course, are laid aside. Why a dentist should resort to such a composition, is, indeed, strange, as a most superior article can and is made free from such, and which will not only assist in cleansing the teeth, but preserves the health and tenacity of the gums, purify the breath, and add much to the general comfort of the mouth,

Spurious preparations, as "*tooth enamels,*" washes for removing tartar, &c., are most generally prepared by individuals unacquainted with the wants and character of a good powder, and whose only aim is to make money by a pretty exterior, regardless of the injury and destruction inflicted. Such as these are found in almost every shop window, and many

druggists scruple not to vend an article which it is their duty to know, is most objectionable, greatly imposing upon the confidence of a confessedly ignorant public, by assurances unfounded and, in truth, unreasonable.

It is high time the profession should give some attention to this matter, and advise and instruct their patrons to avoid such detestable mixtures.

Ulceration of the Tongue Cured by the Removal of Two Amalgam Fillings from the teeth.—Mrs. ——, a lady of high respectability of Baltimore, about twenty-eight years of age, called on us, the 17th of May, 1850, to obtain our opinion with regard to the condition of her teeth, and to have such operations performed on them as they might require. On examining her mouth, our attention was attracted to an ulcer, of a somewhat indurated character, on the under part of the right side of her tongue, where it came in contact with the grinding surface of the last molar tooth. Observing a large amalgam filling in this tooth, with a black oxydized surface, though it had apparently been put in and finished in a very perfect manner; it immediately occurred to us that the ulcer of the tongue might be connected, in some way, with it—or rather, that it had been caused by the action of a corrosive oxyd, formed by the union of the mercury with some of the acids of the mouth. The correctness of this opinion seemed to be confirmed by the fact, which we learned from the lady, that the ulcer had not developed itself until some two or three months subsequently to the introduction of the amalgam into the tooth, which had then been in about nine months. Although it had been touched several times with nitrate of silver, it manifested no disposition to heal; on the contrary, it had for some time been gradually assuming a more and more aggravated character. On mentioning our suspicions, the lady at once determined to have the tooth removed, as she had been assured it could not be filled with any other material. We, however, dissuaded her from this, advising that the amalgam should be first removed, and then, if the tooth could not be filled with gold, we told her it would be time enough to extract it.

After taking the amalgam from the tooth, we proceeded to fill it with gold, four hours and a half being occupied in the operation.

The ulcer in the tongue almost immediately began to assume a healthier character, and entirely disappeared in about six weeks.

About this time we were requested to perform any other operation upon the lady's teeth which might be required for their preservation, and as the socket of the second molar on the other side of the mouth, in the lower jaw, was the seat of a very troublesome abscess, we at once removed the tooth. This exposed the surface of another large amalgam filling, in the anterior approximal surface of the third molar, and with which the tongue occasionally came in contact. The first and third molars having become

somewhat loosened from inflammation of the peridental membrane, caused by disease in the socket of the second, we concluded to defer operating on these teeth until the adjacent parts should have assumed a healthy condition. In the mean time, some three or four weeks after the extraction of the above mentioned tooth, an ulcer developed itself on the side of the tongue, just where it came in contact with the amalgam filling in the third molar. A few weeks subsequently the amalgam was removed and the cavity filled with gold. The ulcer soon after healed.

Now what connection the amalgam fillings had with the ulcers on the sides of the tongue in this case, we leave others to determine, contenting ourself with simply mentioning the facts of the case. Comments are unnecessary.

Stockton's New Style of Mineral Teeth.—Mr. S. W. Stockton, of Philadelphia, has recently placed the members of the dental profession under renewed obligations to him for a very great improvement which he has recently made in the manufacture of porcelain teeth. He is now producing an article which, for beauty and every other desirable quality, surpasses any we have ever seen.

Annual Commencement of the Baltimore College of Dental Surgery.—The twelfth annual commencement of this institution was held on Thursday, 27th March, at 11 o'clock, A.M., in the Assembly Room, corner of Hanover and Lombard streets. The exercises were opened with prayer by the Rev. Dr. Piggott; after which, Prof. T. E. Bond gave a brief history of the institution. Prof. Cone then made a report of the operations of the Infirmary, stating that 1700 cases had been successfully treated during the year. Prof. Handy stated the authority for conferring the degree of "Doctor of Dental Surgery," read the names of the candidates for the same, with the subjects of their theses; who were afterwards called up in classes of four, and the degree conferred on them by Dr. Harris. Dr. Eleazar Parmly, of New York, Provost of the Institution, then proceeded to deliver the Valedictory Address to the graduates, which was listened to with the most profound attention, not only by the class, but also by a very large and fashionable audience of ladies and gentlemen, who increased the interest of the occasion by their presence. The Address reflected great credit upon the distinguished author, abounded with much excellent advice to the graduates, and contained interesting biographies of the late Drs. L. Koecker, of London, and L. Roper, of Philadelphia. We hope to have an opportunity of presenting the Address entire to our readers in a future number of the Journal.

The exercises were interspersed with music from the Blues' Band.

The following are the names of the graduates: Rufus K. Chandler, of Va.; R. P. Bessant, of North Carolina; Wm. J. Reese, of Alabama; J. Randolph Walton, of Md.; George S. Jones, of Kentucky; Edward H. Howerton, of Va.; John A. Johns, M. D., of Va.. Edward S. Billups, of Georgia; Lloyd T. M'Gill, M. D., of Maryland; William S. Brown, of South Carolina; Thomas W. Bacot, do.; Richard M. Adair, of Kentucky; Ehrick Parmly, of New York; George S. Bretz, of Pa.; Thomas D. Miller, of England; James North, M. D., of Maine; Francis P. Abbot, do. Total, 17.

Corundum Wheels.—Mr. Francis Arnold, dental and surgical instrument manufacturer, of Baltimore, has recently imported from England an assortment of corundum wheels, varying in diameter from half an inch to four inches. He has also slabs, varying in shape and thickness, especially designed for mechanical dentistry. To those who have never used corundum wheels, it may be necessary to state that they cut porcelain about four times as fast as an emery wheel, and leave a much smoother surface. As they have been used in our laboratory for about two years, we can certify to their superiority over any kind of grinding wheel which has come under our notice.

John D. Chevalier.—We are sorry to learn that the extensive dental and surgical instrument manufactory of Mr. Chevalier, of New York, was recently consumed by fire. We trust that his loss was covered by insurance, and that he will soon be able to fill orders from the profession with his usual promptness.

The Journal.—Dr. Harris, the present editor, has associated with him, in the management and editorship of the Journal, Alfred A. Blandy, M. D., who will hereafter assist in discharging all duties connected with the publication.

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ARTICLE I.

Treatment of Dental Caries, complicated with Disorders of the Pulp and Peridental Membrane. By ROBERT ARTHUR, D.D.S.*

NO. II.

INFLAMMATION OF THE DENTINE.

THERE are few subjects connected with dental surgery, the study of which is of more practical importance than that exquisite sensibility of the dental bone, which so often presents itself even when caries of this part of the tooth is quite superficial. That this is a true inflammation of the part I am irresistibly led to conclude, both from a consideration of the structure of the teeth, and from the variety of phenomena which daily present themselves in practice, for which I am unable satisfactorily to account upon any other hypothesis.

I do not, at present, propose to enter very fully into the discussion of this question, but may on some future occasion do so. I will, however, state briefly the reasons which have brought me to the above conclusion.

The vitality of the bony portion of the teeth is not now questioned. It is, indeed, no longer a matter of theory, but has

* Entered, according to the Act of Congress, by ROBERT ARTHUR, D. D. S., in the Clerk's office of the District Court of Maryland.

been repeatedly demonstrated, and the presence of red blood in certain conditions of the teeth has been clearly displayed in the dentine. It has been shown, by the late Mr. Alexander Nasmyth, that the dentine is endowed with a much higher degree of vitality than is generally supposed. "The ivory," he says, "contains numerous fibres of animal matter composed of nuclei of cells arranged in a linear order, and these must be the agents of the transmission of sensation, although it must be admitted that no direct communication can be discovered between them and the nervous filaments; the fibres of the ivory must therefore be regarded as not only endowed with the functions of absorption, nutrition and secretion but also with that of sensation." That a tissue thus highly organized is liable to inflammation I do not think is to be questioned.

If it be admitted, and I think it cannot be successfully denied, that the dentine is liable to inflammation, then the question comes: under what circumstances is it likely to occur?

Among other exciting causes of inflammation enumerated in the chapter on that subject, introductory to "Cooper's Surgery," is mentioned "the application of innumerable irritating substances to parts." The agents in the mouth, which produce decay of the teeth, if sufficiently powerful to cause decomposition of the dental bone, which they do, cannot but be of an exceedingly irritating character. As the dental bone possesses all the vital qualities which render it liable to inflammation I cannot see why it should be expected to escape when exposed to the same influences which produce such an effect in other tissues of the body.

That this is really so, many phenomena of frequent occurrence, coming I suppose within the observation of every dentist in practice, clearly convince me.

This sensibility of the teeth is believed by many practicing dentists, at the present day, to be merely their natural sensibility.

If this were so, we might look for some uniformity in this condition of the teeth. We might at least expect to find the same degree of sensibility in all the teeth of the same individual; or if it be admitted that some of the teeth are endowed with a

greater degree of vitality, which has been attributed to the incisor teeth, we might, at least, expect to find a higher degree of sensitiveness in these than in any others. But such is not the fact. And experience shows that in the mouth of the same individual, whilst some of the teeth are extremely sensitive, others, neither more nor less decayed, and of the same class of teeth, are scarcely at all sensitive.

If this extreme degree of sensibility of the teeth is truly their normal condition, we should expect to find in all cases the more nearly we approach the pulp cavity, an increase of sensibility. For no one will, I presume, dispute the principle that the natural sensibility of any part is in exact proportion to its degree of vitality; and we know that the nearer we approach the dental pulp the more vascular do we find the dentine. But we do not find the bone of a decayed cavity in all cases more sensitive as we approach the pulp, but often observe that the most sensitive part may be most distant from the pulp cavity; and it is a fact, which has been repeatedly stated, that if in some cases a layer of sensitive bone is cut rapidly away with a sharp instrument, the sound bone underneath will be found almost, if not entirely, insensible. This is exactly the reverse of what we should reasonably expect if the cause of this sensibility here mentioned were the true one.

It will sometimes be found that the cavity of a tooth very slightly decayed is so sensitive, that the lightest touch of an instrument, or a piece of cotton or lint brought into contact with it will produce the most violent pain. Whilst I know that the teeth, in a healthy state, are endowed with some sensibility, still I cannot believe that that which is here described is their natural condition.

It will be observed that when a cavity slightly decayed is prepared for filling, and the cavity is left open for twenty-four hours or longer, that the sensibility of the part is greatly increased; and I have noticed, too, that sometimes the bone of a cavity which is not at all sensitive, if left exposed, after having been prepared for filling, to the contact of the fluids of the mouth, it becomes, after a time, highly sensitive. I do not see how

these facts can be accounted for on any other hypothesis than that which I have advanced.

At the time of writing, a well marked case of this kind has just occurred in my practice.

Case I.—Mrs. C. aged about thirty-five. I had occasion to prepare for filling, amongst others, a cavity situated in the anterior lateral surface of the second left superior molar. The first molar was absent. The cavity was neither large nor very deep, and required considerable excavation; this produced no pain of consequence, not sufficient to induce the patient to speak of it. When the cavity was prepared, it so happened, that I was unable to complete the operation at that sitting. It was some days before I was able to see the lady again, and I then found the bone of the cavity so extremely tender, that it gave her great pain when I attempted to dry out the cavity, and I was obliged, or at least as it was in my power to accomplish it I preferred doing so, to remove this tenderness of the part before completing the operation.

On the other hand if a highly sensitive cavity is filled with any substance, so carefully as entirely to exclude the fluids of the mouth, this sensibility will after a time pass away, as is shown in the following case, which is one of by no means rare occurrence.

Case II.—April 21, 1851. Miss H. aged about fourteen, came into my hands a year ago. Most of her teeth requiring attention were more or less sensitive, and she suffered much pain in the course of the performance of the necessary operations. The right superior lateral incisor was decayed, not very deeply, on the anterior lateral surface, but it was extremely sensitive, and with all her efforts, she could not bring herself to bear the perfect preparation of the cavity. After preparing it, however, as well as I could, I endeavored to fill it with gold, but found that the attempt caused so much pain that I desisted, satisfied that, if continued, the operation would result in the destruction of the vitality of the pulp. I then determined, to accomplish the object above indicated, to fill it temporarily, and tried gutta percha for the purpose. This, however, owing

to the small size of the cavity, would not answer, although I am inclined to believe that in many cases it might be found useful. I then filled the cavity with tin foil, which with care, I succeeded in doing tolerably well. To-day, after the lapse of a year, she called on me again, as I had directed her to do. I removed the tin filling which was much firmer than I supposed it to be, and found that the sensibility of the bone, which was so extreme when I filled the cavity, had now almost entirely passed away. I had no difficulty in perfectly preparing the cavity for filling, although I cut down below the surface of the bone. I then filled it permanently with gold. There is another point about this case of importance. When the cavity was filled a year since, in the imperfect manner in which I was obliged to do it, the decomposed bone was not entirely removed, but a considerable portion of light colored caries (a species which, it is well known, proceeds with rapidity) was left, owing, as I have stated, to the extreme tenderness of the part; on removing the tin filling and examining the cavity, carefully, I could not detect the slightest change in its condition. If the caries had progressed at all, it had been so slowly, and to such an inconsiderable extent, that it was inappreciable. I shall subsequently refer to this fact.

Now, in this case what seems to have occurred; I not only cut away the external layer of bone which might have been supposed to be deprived of its vitality but I cut down to what must have been living bone, and found only a very slight degree of tenderness, and none of that exquisite sensibility which a year ago prevented me from operating well. I am satisfied that the bone, protected from the action of the extremely irritating agents which were rapidly destroying it, and producing great inflammation of the part, recovered its natural healthy condition.

I have intimated above that I feared, if I had persisted in filling the tooth in the case mentioned, that I should have run the risk of destroying the vitality of the pulp. And this result, sometimes following the operation upon a tooth in this condition, shows the propriety of considering this sensibility of the den-

tine in connection with the treatment of the dental pulp. I have found, as the following case will show, that the pulp is sometimes destroyed either by the pressure of a firm filling, well compacted, or the irritation attendant upon the preparation of the cavity. And I am inclined to believe that a good many of those cases we meet with so commonly, of teeth in which the pulp is dead whilst they are but slightly decayed and filled, are to be attributed to the same cause. I have often closely questioned persons who have had teeth in this condition, and have been satisfied from what I have gathered from them that, at the time the teeth were filled, the pulp could not have been even slightly exposed. My own experience confirms me in this view. I have generally been very cautious in all such cases. Sometimes treating them as the one above detailed, and sometimes taking measures first to remove this excessive sensibility, and consequently few such results as that recorded in the case below have occurred in my practice. I do not mean to be understood as implying that consequences of this kind are likely to occur in a majority of cases where this sensibility exists, but I am satisfied that they do occur probably more frequently than is generally suspected.

CASE III.—Mrs. L. Aged about thirty-five. First left superior bicuspis-crown and posterior lateral surface. This tooth I found slightly decayed at the places above indicated, but so extremely sensitive that it required the greatest effort on the part of the patient to bear the necessary excavation. As, however, she was willing to bear the pain attendant upon the operation, I completed the preparation of the two cavities. Fearing, from the extreme tenderness of the cavities, that the pulp might be slightly exposed, I now most carefully examined them in every part, and satisfied myself that this was not so. I then proceeded to fill them with gold, a good deal of pain was experienced during the performance of this part of the operation, but not more than I have many times observed in similar circumstances. After the fillings were completed, no pain was complained of, and the patient went away quite satisfied to have got through with so painful an operation. After the lapse

of some days she called again, and complained of having suffered some pain with this tooth. I examined it, and to my surprise found that an alveolar abscess had formed above it. I intended removing the fillings and extirpating the pulp, but I did not have an opportunity of doing so.

In this case I know perfectly well that the pulp was not exposed, even very slightly. The caries was by no means deep, not extending I am quite sure half way through the dentine, and if it had not been for the very great tenderness of the cavity, I should never have thought it necessary to examine to see if the nerve was exposed. But supposing it possible I did make a most careful examination before beginning to fill, and quite satisfied myself that there was no opening into the pulp cavity. This it seems to me was a clear case of inflammation of the bone, extending to the pulp, and the unfavorable result was caused by the great irritation consequent upon the excavation of the cavity and the pressure of the gold filling, which, of course, was inserted with much force, upon the inflamed bone.

Careful attention to the symptoms attendant upon the progress of caries of the dentine, furnishes, to my mind, strong evidence of the position I have here taken. I have had the good or bad fortune to be able to study this subject in my own particular case, and whilst my sound teeth are as insensible as those of any other person, those which have begun to decay, furnish me, by sensation, with unmistakeable evidence that they are diseased. I am aware, at times, of a sensation in them, not exactly a painful one, but a faint consciousness of the form and position of the decayed cavity. My attention has frequently been called by patients to teeth which they had an impression were decayed, although they had never caused pain nor exhibited externally any evidences of decay. I never neglect on receiving such a hint, most carefully to examine the teeth indicated, and rarely, if ever, find them sound and healthy. This impression of a sensation is produced, I do not doubt, by the compression of the inflamed and swollen animal portion of the bony tissue, in a manner precisely analogous to what occurs in tooth-ache in the pulp itself. Dr. Maynard informs me that he has been conscious of the same sensation under similar circumstances.

In the lecture on dental caries in the admirable treatise on "Dental Physiology and Surgery," by Mr. Tomes, republished in the "Journal," I find, since writing the above, the following paragraph corroborative of the statement just made.

"The diseased action is not attended by severe pain, but I am disposed to think that even early in the disease, there is, in almost all cases, a feeling of slight uneasiness in the affected tooth, though the degree may be so slight as to escape detection at the time, or lead only to the supposition that some foreign matter has got between the teeth. I am induced to adopt this opinion, though at variance with several authors of distinction, both from the description given by patients who have suffered from caries, and also from personal experience in this unpleasant malady. On several occasions my attention has been drawn to a tooth by a sensation not perhaps amounting to pain, but to slight discomfort only, which lasted but a few minutes. After a recurrence, from time to time of this unpleasant sensation, I have examined the tooth, and have invariably found that caries had commenced in the situation from whence the uneasiness seemed to proceed." Mr. Tomes' experience seems to have been precisely my own.

There is a great difference in different individuals with respect to the sensibility of teeth affected by caries. Whilst many suffer the most agonizing pain in having operations performed upon their teeth, many suffer so slightly as to render it a matter of indifference, and others do not experience the slightest painful sensation. I have noticed that in cases where the caries is of soft consistence and light color, denoting rapid decomposition of the part affected, great tenderness of the bone is present, and on the contrary, when the caries is of a dark color, and progresses slowly, that there is but little tenderness of the affected part. This, however, is not invariably the case, but I have observed it generally. The explanation of this difference must, I think, be found in the fact, that in one case the chemical decomposition of the bone, produced by agents which do not in the same proportion destroy the animal portion, goes on so rapidly that the death of the vital part does not take

place simultaneously, but is previously thrown into a state of great inflammation; in the other case, where the disease progresses slowly, the entire death of the whole bone occurs.

I have observed that in the teeth of the same individual there is a difference in degree of this sensibility at different periods of life. I have now in my hands, a lady about twenty-eight years of age, upon whose teeth I have operated since she was a girl. Before her marriage, her teeth were generally as little sensitive as those of any other person. At this time she has been married several years, and has had two children. Her teeth, when decayed, are now extremely sensitive.

It is a well known fact, that in some cases, if the bone for a little distance below the decayed surface of a very sensitive cavity be cut away with a sharp instrument, it will be found but slightly tender, and the operation may be continued with but little pain to the patient. Now, it seems to me, that no clearer evidence of a change in the condition of the bone could be asked for than this; for if this sensitiveness were only the natural sensibility of the tooth, it would of course not grow less as you approach the more vital parts of the tooth, but would with reason be expected to increase. What we understand by inflammation, is such a change in the condition of the part as will fully account for the fact here mentioned. The irritating agents causing decay, have excited an inflammatory action in the portions of bone exposed to its contact, without affecting such portions as are beyond its reach, and as soon as this outer layer is removed, we reach bone which only exhibits its natural degree of sensibility.

It is not always the case, however, that the removal of the carious portion and the layer of bone immediately adjacent to it will have the effect just mentioned; but this extreme sensitiveness may continue till the operation is completed. This may be accounted for on the supposition that the contact of the carious bone has excited so high a degree of inflammation that the whole body of the dentine is affected.

Other facts going to confirm the opinion that this great sensitiveness of the carious dental bone is due to inflammation of

the part, might be mentioned, but this I do not think necessary. If those already presented are not as convincing to others as they have been to me, I should be glad to have them explained, for I must confess that I have never been able, nor am I yet so after thinking a great deal about it, to find any other satisfactory explanation than that which I have just given.*

It may be said, that the discussion of this question is a matter of very little practical importance. I do not think so. If my position is tenable, it may, as I have stated, account for instances in which the destruction of the pulp has occurred, after an operation, long before it has become uncovered, and it must lead to other practical considerations of importance. Besides, it is often seen that the discovery of truth, in relation to the causes of any morbid condition of the system, leads to practical results which were never before anticipated. This remark, indeed, holds good with regard to the proper and thorough scientific examination of every subject. A discussion of this kind, based upon observation, is a very different thing from the practice, not uncommon, of erecting an elaborate theoretical structure, which cannot be applied to any useful purpose, upon a very slender foundation of facts.

But whatever may be the real cause of the condition of the teeth here alluded to, and about which I have said more than I intended, it is one of the most serious obstacles to good practice with which we meet; at least I find it so. And I know that some skilful members of the profession, with whom I have conversed on the subject, have found it equally so. It may be a great weakness to allow the knowledge that you are inflicting severe pain in performing an operation to disturb your equanimity, and in any way interfere with the perfect accomplishment of what you know is intended for the ultimate good of your patient; but it is a weakness I have found it very difficult to overcome. Although I make it a rule, in this as in every other case, to do my best, regarding, as little as possible,

* Since writing the above, I have read an article in the "American Journal of Dental Science," by Dr. E. Townsend, of Philadelphia, in which I am gratified to find, he takes the same view which I have just presented.

the pain inflicted, if it is necessary, I must confess, that I am so anxious to get through with so unpleasant a task, that I am apt to stop in the preparation of a cavity, which I *think* it will answer, without always being certain of it. Gentlemen who have alluded to this subject, have generally treated it lightly, making some passing remarks about it, and stating that a few bold strokes, with a sharp instrument, will end the difficulty. In some cases, as I have already said, this is so; but not, by any means, in the greater number. I may, perhaps, give more importance to this matter from having known something of it from personal experience. My own teeth are very sensitive, and I do assert, for those who have never had the benefit of such experience, (to those who have had, I am sure no such assurance is necessary,) that the preparation of a decayed cavity for filling, when the bone is inflamed, is one of the most agonisingly painful operations that I have ever undergone. It is a peculiar, indescribable, unendurable sort of pain, very different from that produced by the incision of the skin or of muscular tissue. These cases are far from being exceptions. In the course of practice I frequently meet with persons who seemed to suffer the most dreadful agony from this cause. That this experience is not peculiar to my own practice, the following extract will show: "A few cases are met with, in which there is considerable pain attending the progress of caries long before the pulp is at all affected by exposure, or by the contact of partially decomposed dentine. The tooth is, from the commencement, highly sensitive: the contact of hot or cold fluids induces severe pain, and may attempt to remove the carious dentine, though the disease has existed but for a short time, and is very slight in extent and depth, *produces such unbearable pain, that the attempt is for the time obliged to be abandoned.*"—Tomes, Jour. vol. viii, 211. In many of these instances, this exhibition of suffering could not be attributed to a lack of firmness, as the following case, I think, will prove:

CASE IV.—Some six years ago, my services were desired by a lady whose teeth were in such condition that they were, with the exception of the inferior canine and incisor teeth, past the

hope of preservation. These were slightly decayed on their lateral surfaces. The patient in question had never had any teeth extracted, and at three sittings they were all removed, with the exception of those just mentioned. It was determined that these should be filled. She bore the operation of the extraction of her teeth, some of which were very difficult to take out, with stoical firmness. After the mouth had healed somewhat, I proceeded to prepare the cavities in the remaining teeth for filling, and found them extremely sensitive. She shrunk at once from this pain, and after I had completed one cavity and had begun another, she declared she *could not* bear it, and insisted on having the teeth extracted. As their preservation was not a matter of much importance, and as I then knew of no safe means of removing this sensitiveness, I complied with her request. This is a strong case; but I have repeatedly met with patients who have declared that if it were not for the loss of the teeth, they would infinitely prefer to suffer the pain of their extraction, than to endure this horrible torture.

Now, the operation of the extraction of teeth, even with the present greatly improved instruments in use for the purpose, is an exceedingly painful one, and probably as much dreaded by most persons as any kind of surgical operation to which they could be obliged to submit. And, I think, it will be admitted that the operation which exceeds this in the intensity and duration of the pain it causes, even if it be only in the imagination of the patient, is well worthy of our most earnest efforts to find a remedy for the evil. It is a plain duty, and it ought to be a source of great pleasure to every one, to do all in his power towards the alleviation of human suffering; and there is no field in which he may labor more profitably for this purpose than in this one. For when the vast number of operations on the teeth, which we daily perform, are considered, it seems probable that the aggregate of pain inflicted, is greater than occurs in all the practice of general surgery. This, indeed, would be certain if all persons who are obliged to submit to operations on the teeth found them in the condition just described, for whilst a large proportion of the people composing our communities

now give attention to their teeth, a comparatively small number are subjected to surgical operations.

But, however regardless a practicing dentist may be of the pain he inflicts, or however steadily and coolly he can go on to the completion of his operations, when he is aware that his patient is in an agony of suffering, there are other considerations which render an effort toward the lessening of this evil, an important matter to him. Although some persons who come into his hands have nerve enough to bear any operation upon their teeth, no matter how painful it may be, without flinching, there are others who cannot bear it steadily, and some who cannot, or will not, bear it at all. And it is easy to perceive, that any thing like a perfect operation is out of the question, when the patient is shrinking from, and writhing under, every touch of an instrument.

The very great dread of dental operations exhibited by children, is to be attributed principally to this cause; wholly, indeed, with the exception of the extraction of teeth; and I have met with children who could not, by any means, be induced to submit to the operation of filling their sensitive teeth. I remember one case, in which the little fellow who made a great effort to bear the pain, sobbed so violently at every attempt I made to prepare a cavity in one of his teeth, that I was obliged to desist. And at this time, the case of a little girl, not more than seven years of age, for whom I found it necessary to fill the first permanent molar teeth, comes into my mind. She sat perfectly still whilst I was operating, but the big tears rolled down her cheeks during the whole time, giving such touching evidence of what she was suffering, and of the firmness with which she bore it, that it was no little relief to me to have completed what I felt obliged to do for her.

Now it will be seen, that if a certain and safe remedy for this be found, it will not only render our profession less formidable, but will enable us to perform more perfect operations. It must be plainly seen, too, that it will greatly increase the aggregate amount of business, and contribute largely towards the cause of humanity by extending the sphere of our usefulness; for many

persons who cannot now be induced to avail themselves of the benefits of our profession, in consequence of their invincible dread of the pain they are obliged to endure, would gladly do so if they could escape some portion of it.

This matter has engaged my earnest attention for a number of years, ever since, indeed, I have been in practice, and I have not failed to make trial of every thing which has been suggested by others, or which has occurred to my own mind, for the purpose indicated; but until within a few months past without satisfactory success.

I have tried faithfully, the mineral acids, the caustic alkali, nitrate of silver, tannic acid, chloride of zinc and even the actual cautery.

Chloride of zinc, which I first used about seven years ago, and applied for experiment in a variety of ways, did not at all come up to my expectations. In the first case in which I used it, the result was so strikingly successful that I was satisfied that the desideratum for which I had been looking, had at last been fallen upon. But I subsequently found that, from causes which I could not discover, it was so extremely uncertain in its effects, not answering the desired purpose once in twenty times, and gave so much pain when applied, that I abandoned its use. I gave it a faithful trial, and was reluctant to give it up, for I felt convinced, from its peculiar escharotic properties, that it was just the agent which would answer fully the purpose of destroying the vitality of the part with which it was placed in contact, without extending any further. I perceive it stated in the last number of the Journal, by Dr. E. Townsend, of Philadelphia, that he uses it with success, by allowing it to remain half an hour in the sensitive cavity. I certainly still believe it well worthy of further trial.

Till within a few months, the only substance of which I knew any thing which would, with uniform certainty, remove this sensitiveness of the dental bone, was arsenic. But there are serious objections to this agent for the purpose in question, and it could scarcely, with safety, be recommended for general use. When applied to a tooth considerably decayed, or allowed to

remain any considerable length of time in a *very* superficial cavity, it is likely to pass in a state of solution through the substance of the bone, to the pulp, and ultimately destroy the vitality of this part of the tooth. This result, so liable to follow its application, has driven arsenic, for this purpose, out of general use. It has been asserted that arsenic cannot be applied to any tooth, in any stage of decay, without eventually causing the destruction of its vitality, even after the lapse of years. This is supposed to occur from the impossibility after it is once applied of removing every particle of the substance from the cavity, and that, however minute the quantity which remains, it will at last find its way to the pulp. But this assertion I know, from actual experience, to be like many other sweeping assertions occasionally made, as well in our own as in other professions, to be unfounded in fact. I have used arsenic occasionally for the last ten years for this purpose, and have never in any case, when I applied it with proper precaution, and my directions were carefully observed, had bad results. Cases I know now of seven years standing where the teeth are as healthy as any in the mouth. But it is unnecessary to urge the claims of this substance, for the purpose in question, or to give any particular directions about its use, for I have another agent to offer which entirely supersedes the necessity of using it in any case.

This is the ore of cobalt. My attention was first called to this mineral, for the purpose of destroying the vitality of the dental pulp, by Dr. Hunter, of Cincinnati, in a conversation with him last summer in Philadelphia. Dr. H. did not claim it as a discovery of his own, but said he had accidentally fallen upon it, and that it had been used in the west long before he knew any thing of it. I have since used it exclusively for destroying the vitality of the pulp, and latterly with very satisfactory results, for removing that sensibility of the bone which has formed the subject of this chapter.

The active escharotic properties of the ore of cobalt is undoubtedly due to the arsenic which is always found combined with it in large proportions. Some kinds of this ore contain as

much as fifty-five per cent. of pure arsenious acid. But the peculiar advantage of this substance is, that it is insoluble in the fluids of the mouth, whilst the arsenious acid is readily soluble. The importance of this difference between the two substances, is obvious. The danger of using arsenic in the cases of which we are now treating, arises from the fact, that it is soluble in the fluids of the mouth and, in a state of solution, as we have already said, will rapidly pass through the substance of the bony portion of a tooth, when placed in a cavity, and reach the pulp; this it will certainly do, if allowed to remain long enough, no matter how thick or dense the layer of bone may be which covers the pulp. It has been said, and I doubt not with truth, that if an opening is made through the enamel of a sound tooth and a small quantity of dry arsenic is placed in it, that it will eventually destroy the pulp. Now, although I am unable at present to demonstrate that the particles of pulverised cobalt cannot pass through the substance of the dental bone, I think it was doing no violence to strong probability to suppose that it could not, and felt justified in making experiments with it. The animal matter of the bony substance is small, and does not, under ordinary circumstances, admit the corpuscles of red blood, which have (see Carpenter's Physiology, p. 120) the minimum diameter of 1.2800th of an inch. It is scarcely probable, as I have said, that the particles of cobalt in a pulverized state can be so minute as to pass through a substance which excludes the smallest corpuscles of the red blood.

The inferences drawn from actual experiment in the use of cobalt for the purpose indicated, and a comparison with the effects produced by the arsenious acid in similar circumstances, justify strongly such a conclusion.

The following is one of several similar cases which have come into my hands:

CASE V.—January 10th, 1851. Mrs. A. aged twenty-seven; nervous temperament. Found first left inferior bicuspis badly decayed on the anterior lateral surface. Examined closely and found decayed very nearly to the pulp, although this was not actually uncovered at any point. On attempting to prepare it

for filling, found the bone of the cavity extremely sensitive, and the patient, who did not lack firmness, declared after several efforts, that it was entirely out of her power to bear the pain necessary to prepare it for filling. She begged me to extract the tooth at once and let the matter be over. I found I could do nothing, unless by some means this sensibility could be removed, and I regarded it as quite justifiable to attempt it, even at the risk of destroying the pulp. I had used cobalt for destroying the vitality of the pulp, had thought a good deal about its action in such a case as this, and determined to make a trial of it. I mixed a small quantity finely pulverized, with gutta percha, softened by the lamp, and filled the cavity with it. This I allowed to remain twelve hours. At the end of this time I removed it, and found the sensibility of the cavity scarcely at all diminished. Confident that it must destroy the vitality of the bone with which it was placed in contact, I again applied it, and allowed it to remain twenty-four hours. On its removal, I found the bone still sensitive, but remembering from some experiments with arsenic, for the purpose, that the sensibility of the bone is always at first exalted by the action of the material, but subsides in some hours after its removal, I determined to wait a little while before making another trial. About forty-eight hours were now allowed to elapse before I made another examination, when I found so little of the sensibility remaining that I was enabled to complete the operation with scarcely any inconvenience to the patient.

Now, if arsenious acid had been used in this case, I know well, from the experience I have had in its use, that in one hour it would have reached the pulp. The symptoms produced would first have been a dull sensation of pain, and if the arsenic had not been removed at once, would have increased in violence till tooth-ache, of the worst character, would have set in. If it had not produced any immediate effect of this kind, it would certainly have occurred in a few days.

That the cobalt, in this case, did not produce any effect upon the pulp is evident, from the fact that no kind of uneasiness followed its application, although it remained in all, in contact

with but a very thin layer of bone between it and the pulp, some thirty-six hours. But if this is not sufficient, the subsequent condition of the tooth fully proves, I think, the fact, that its vitality is unimpaired. Some four months have now elapsed since the operation was completed, and there has not yet occurred the slightest symptom indicating any change in its condition. I have examined it carefully, and repeatedly, and have not yet seen the least indication of peridental inflammation or anything which would induce me, for a moment, to believe that the pulp had been touched.

This, as I have stated, is but one case out of several of precisely the same character.

The cobalt ore will, undoubtedly, uniformly remove this extreme sensibility of the dental bone; and the only question as to the propriety of its introduction into general use in practice is: can it always be used with safety, without lessening the chances of the ultimate preservation of the teeth? This is a question which I cannot yet venture, with confidence, to answer affirmatively. In the course of my experience I have met with many things which at first sight promised a great deal, and which were eventually shown to have objections almost, if not entirely, neutralizing the good results expected from them. This may be the case with the agent I now offer. The advantages which in my hands have attended its use, almost seem to be too great not to have some drawback. But I am satisfied, that even if it do not fully meet my expectations now, it will be found a valuable acquisition to the practice of dental surgery. I can only say to every member of the profession disposed to make a trial with it, to do so cautiously and with discrimination, and time, alone, must test its real value.

The only unpleasant result I have yet observed in its use, so far, is, that in some cases slight peridental inflammation has occurred. What renders this unaccountable, is, that I have always observed it to occur, when it did occur, which has probably not been more than in six cases out of a hundred, in quite superficial cavities, and never, that I now recollect, in any case of considerable decay, where it might have been expected. It is

quite impossible to account for this result by supposing that the cobalt could have, by any means, passed through the thicker and denser body of bone in these cases, when it did not do so when placed in a cavity where there was a much thinner wall of bone to protect the pulp, and this, too, of a character (the fibres being more direct and not so tortuous, according to Nasmyth) much more likely to favor the transmission of any substance which could pass through it than the bone nearer the enamel.

I have applied it in several ways, and have observed some difference in the results corresponding to the manner of its application. I found it by no means so active when mixed with wax, as I once used it, the wax coming probably between the cobalt and bone, and preventing direct contact.

The most convenient and effective method I have fallen upon to apply it, is to dissolve sandarach in alcohol, saturate a piece of cotton in the solution, and take upon it as much cobalt as is necessary; about the twentieth part of a grain is sufficient. Enough cotton should be taken to fill the cavity. When pressed into the cavity, the superabundant liquid must be wiped away, and enough will be left to cement the fibres of the cotton and form a very substantial temporary filling. This will make it easy to apply the cobalt to the most shallow cavities, as the cotton saturated with this preparation will readily stick to the surface to which it is applied.

When the cavity is so deep as to give occasion for any fear of its action upon the pulp, I have always regarded it as safer to apply it with gutta percha, by softening this substance and working the cobalt into it. Even if it be possible for the particles of cobalt to pass through the substance of the bone, this would effectually prevent it; for the gutta percha is perfectly insoluble in the mouth, and whilst it would hold the cobalt in contact with the affected part, would not allow a single atom to escape from its grasp. It is used, as any one will know, who has used gutta percha for any purpose, by softening the gum in a lamp and pressing it into the cavity. Gutta percha dissolved in chloroform, might answer a better purpose than the sandarach mentioned above; I have not tried it, however.

In using the cobalt for this purpose, I generally allow it to remain from twenty-four to forty-eight hours. If the cavity is deep, I remove it in twenty-four hours, and fill in twenty-four hours afterwards. I have generally found, in removing it, after it had remained only this long, that the sensibility of the part was not much diminished, but would be found entirely gone, if the same time were allowed to elapse after its removal before the preparation of the cavity was attempted. I have observed, as I have already mentioned, in the use of arsenic, for the same purpose, that in removing it, after it had remained two or three hours, the sensibility of the part would be found rather exalted than diminished; but, that the next day scarcely a trace of it would be found remaining. In bringing about the death of the bone, the inflammation of the part to which it is applied, is, of course, at first increased. But if the cobalt is allowed to remain forty-eight hours, no trace of the sensibility complained of will generally be found to remain. Whether it is always safe to do this, must be a matter for future observation; I can scarcely think any risk attends it, for in slight cavities, on one or two occasions, I have, in consequence of failure of the patient to come at the time appointed, allowed to remain a week without observing any bad consequences.

[To be continued.]

ARTICLE II.

On the Inexpediency and Impracticability of Teaching Dental Surgery in Medical Colleges. By ELISHA TOWNSEND, D. D. S., Philadelphia.

DR. E. B. GARDETTE, a practicing dentist of this city, has a memorial or address in the April number of, "The American Journal of the Medical Sciences," to the trustees and faculties of the medical schools of the United States, upon the propriety and advantages of establishing an adjunct professorship to the chair of surgery, in which the specialty of dental surgery may be taught to the medical students attending those institutions.

The system of public instruction in medicine and surgery, now in use in this country is by no means settled or satisfactory to the profession; and dental colleges have so recently come into existence, and are still so few in number, that their organization and method have not yet had the benefit of a large and varied experience, nor, perhaps, have they been very thoroughly considered even in theory. Dr. Gardette's proposition brings the order and policy of both into discussion, together as one scheme. The subject is of very great and pressing importance to dental science, especially, for its highest interests are pivoted upon the policy of public teaching, now soon to be settled definitively by its friends in this country. In the memorial these positions are the principal ones taken. The existence of such a chair in the medical colleges would be generally useful to those, who, to the practice of medicine and surgery may be compelled to add, also, the practice of some branch of dental surgery; and to those among the students in attendance at such colleges, who design to embrace dentistry as their proper profession. The plan is recommended to meet these wants, and urged as a duty and interest of the medical schools. The duty is put upon the ground of the equal importance of dentistry, with the other branches of general surgery, for which such provision is now made. The dental

colleges established within a few years are alluded to, "without examining their history or influence upon the profession," and without investigating the capability or necessity of such distinct institutions for dental education, but to express a regret, and ground a reproach, against the medical schools, for forcing them into existence by the "unjust exclusion of this branch" from the general course. The "singling out of the profession of dentist from among the specialties of surgery and forcing it into an attitude of independence," is attributed to an "inexplicable unkindness." On the point of independent dental colleges generally, the writer contents himself with saying, that the principle would involve the "dismembering of a great family," the injury alleged being the loss to the several branches of the *esprit du corps;* not stated argumentatively, but, in the author's words, as an "expression of opinion" merely. The *interest* of the medical schools in the adoption of the plan, is intimated in an inference that "the students who *now* attend the dental schools would, in this event, be added to the number of matriculates in the medical classes of the country." Considering the doctor's article as it bears upon the question of separate or blended systems of public teaching, I need not notice such general remarks upon the topic as equally concern both, and with this qualification, only, I believe, I have here reproduced the substance and the strength of Dr. G's points, and his arguments in their support. I will now notice what he does *not* examine, discuss or settle, giving my own thoughts freely upon the ground taken, and neglected, and upon related topics generally.

Our best medical colleges have now seven departments of instruction, and as many separate chairs and professors. The adjunct professorship of this plan, would be an eighth, as much as if it were on geology or comparative anatomy, instead of a separate specialty of surgery. But Dr. G. has not once glanced at the practicability, the possibility of adding another to the over crowded divisions of general medicine. The question first to be settled, is, can it be done—is there room for it? Does he propose to add one more lecture in the day, every day,

or any day in the week, to the number now given in our schools? or, does he propose to dock the other seven branches of their fair proportions, to make a place for this one? The doctor has not been attentive enough to the practicability of his scheme, to consider the details at all. The answer of the professors in the several faculties who are most capable of settling it, would be, with one voice, that the principal branches now, have not sufficient time allowed them, to get through with their proper duties, and that the students were already crammed and worked beyond the point most profitable within the terms allowed for their attendance upon the lectures. Dissection, reading and rest, are now too heavily taxed by the hours required in the lecture rooms. In a word, that the existing system is pressing for longer sessions, or more of them, and that there is little or no hope of relief and amendment in this direction. This being the state of things, I may remark here, that the medical schools are fully vindicated against the charge of "inexplicable unkindness," in the exclusion of dentistry from their catalogue of subjects, though the neglect may have happened in fact from other causes, such as the fact, that, years ago, there was nobody to teach it scientifically, and, if it be really impracticable now, or if it can be much *better* taught in separate establishments, their justification for continuous exclusion is complete. But this last point it is the proper province of the dentists to settle. Dr. Gardette has given his opinion and project, and it is but due to both sides of the question to say, that it could not find an abler advocate, or afford a better defence than he can give it, and I conclude that is owing to an inherent weakness in the proposition itself that the doctor totally neglects to show the capability of an adjunct professorship, a single chair in a crowd of eight, to teach dentistry successfully. Any tolerable analysis of the matters embraced in a comprehensive scheme of dental education would, in the mere statement, look much more like a programme for a faculty than for a single teacher. Such an adjunct chair in a medical college, in fact, makes room for nothing that would not be as acceptable and useful to the pupils

in books, or in the form of lectures, printed, as by delivery from the desk. Indeed, if dentistry could find room in a chink so narrow as this, it is not so much of a science, or of a profession, for exclusive study and practice, as we had certainly, and somewhat proudly thought it. But the argument for the proposition is unsatisfactory, not only from its inattention to primary and essential points, conditions precedent, as the lawyer would say, without which neither the reasoning, nor the subject matter can get forward, but it is feeble also in the looseness of its reasoning, wherever that is vouchsafed; for instance, the establishment of separate schools for dental surgery, is huddled into a heap with distinct and separate schools for the surgery of the eye, the ear, &c. Now the word *specialty*, though well enough applied to each, does not establish a resemblance sufficient for the purpose of argument, for, the first question in classifying things is, are they alike in all the circumstances concerned? clearly they are not. To spare the labor of more abstruse inquiry, I will rest it upon such open and obvious points as these, in full confidence of their sufficiency. Dentistry and general surgery are inevitably distinct professions, both in acquirement and practice. No surgeon of eminence, though he does practice, more or less, in all the branches of his science, now taught in the schools, ever performs any dental operations, except, perhaps, the occasional extraction of a tooth. Beyond this, he is as certain, in his need, to call upon a dentist, as upon a lawyer, for their respective services, and for the same reason, his own incompetency. The science of dentistry cannot be picked out of a few general physiological and pathological principles that lie within his reach; nor does its practice lie within the compass of a few prescriptions and general directions. And, on the other hand, nobody ever heard of a dentist undertaking the whole range of surgery, not, I presume to say, because of his incompetency, for, among the twenty-five hundred in the country spoken of by Dr. G., there must be at least the average of education and ability in a considerable number of them; but, because every good dentist really has his hands full of one whole profession

already. Besides the surgery proper of our profession, which is various, nice and difficult, there are mechanical and artistic departments, which need the education of the eye and hand, and the cultivation of a good taste, or, in the language of Dr. Hullihen, quoted by Dr. G. for another purpose, "It required great mechanical skill, which they (medical men and surgeons) had not received and knew not where to acquire. * * * * * * The necessities of the community cried abroad to them for help, which they could not bestow." This is spoken of an earlier period, but it describes the present with equal accuracy. To this may be added the frequent occasions for consultations between the physician, the surgeon, and the dentist, spoken of by Dr. G. as another evidence of the distinctness which we allege and of the practical impossibility of blending the professions even in theory, for the surgeon, it is presumed calls upon the dentist for something more than the mechanical services he can render—this would *not* be *consultation*, but dictation. In fact the surgeon needs for his instruction the *better* knowledge and experience of the dentist in the special range of his profession, than the general practitioners can possibly have. Every where the evidence is abundant that the two avocations are more than one man's work, and that the two sciences are more than a sufficient task for the capacity of a single student and *cultivator*. Even Dr. G. himself, unconsciously concedes one point in his own proposition. He suggests, because he feels the necessity of it, at least one separate chair for our branch, and does not propose to run it in upon general surgery, as another specialty, entitled to an equal place, and capable of equally easy accomodation with lithotomy, opthalmia, surgery, &c. The whole argument raised upon the resemblance goes to pieces when such a difference as this is felt and shown; for if dentistry be that much more extensive as to require its *own* chair, it *may* be so much so as to require two, three, four, or five professorships, a special anatomy and chemistry of its own, a dispensary, and the entire apparatus of a college. A moment since I said that general surgery and dentistry is more than a sufficient task for the capacity of a single student and

cultivator. I did not mean that a surgeon of ability could not acquire what is known of dental science in addition to his own profession proper, any more than I intended to deny to Dr. Gardette, or Dr. Hullihen, or any other eminent dentist, the capability of adding the science of general surgery to his own professional learning. It was with reference to the demand which Dentistry now makes upon its foremost professors for liberal enlargement, greater development, complementary discovery in the science and practice, along with an adapted system of education for its pupils, now pressingly required, that I would set apart the best talents we can command for its *exclusive cultivation*, and deem the task a full one for any rank of mind. And it is in this behalf above all others, that I would give our science the benefit of the utmost subdivision in its method of study and instruction, which unites convenience with utility, and would provide its principal men, with all the conditions, appliances and motives, for the highest achievements in discovery, and the best method of public tuition. In other countries, the healing art is divided at every natural seam, and the time is rapidly approaching when our omnibus diplomas will be split up into a number of different charters, for as many different men as they now contain entire professions. The proposition to load them down with another, and an outside passenger now, is forbidden by the whole spirit and policy of progress. As population becomes more dense, and a truer order gets opportunity, a college of surgeons, a college of physicians, a college of obstetricians, and a college of dentists, will be the least simplification that will satisfy, because it is the least that will secure the very best ends; and every one of them will have its special faculty, nearly as numerous as those now charged with the whole round of the healing arts. There is one consideration of pre-eminent importance, if there be any such difference among the several necessary parts of a whole thing, which is almost alone conclusive for the establishment of separate dental colleges; the dispensary and clinic practice which they are capable of affording the pupils, and which cannot be otherwise or elsewhere obtained. No private

practitioner can give his students any office work, he cannot turn over his patients to them, even for a small operation, and can therefore afford them no practice whatever, in an art that needs much more skill and culture of hand, eye and manner, than all the other branches of surgery and medicine, put together. But, the dispensary which such colleges, located in large cities, always can supply, will secure the opportunities of as much actual training and experience, with its well graduated responsibilities, as the pecuniary means of the institution can take the expense of; and the aspiring student, of his own liberality and enthusiasm, may purchase opportunities beyond this without stint, and all under the best direction, and with the best assistance. I know not well how to exhibit all the advantages that belong to this feature of the separate system, but it is so obvious to persons in practice, that it will receive ready consideration. The allusions which Dr. Gardette makes to the dental colleges already in existence, are guarded by a delicate avoidance of their "history and influence upon the profession" which personal considerations may commend; but, the notion that their existence is a reproach to the medical schools, that they have been driven into independence by the scorn of the medical profession, and have no other *necessity* for being alive, and that their entire apparatus of men and means might be well and advantageously replaced by a single adjunct professorship in each medical faculty, so far as the doctor's opinion, without its argument, can go, is as severe as it is conclusive; and the colleges existing and their friends, and the colleges in possibility, and their advocates, might well spare the courtesy of the doctor's forbearance, for the sake of hearing the reasons on which his sentence is pronounced. Indeed, persons of a different opinion, cannot help feeling that the writer has taken for *granted* a great many things which nobody can *consent* to grant; and although he is not addressing himself to the question controversially, yet for any purpose in his view, it is quite too much to assume three things so important, as first, the practicability of an additional chair in medical schools; second, the sufficiency of such a chair in such circumstances to the thorough indoc-

trination, both of physicians, who must extract teeth occasionally in the country, and those students who design the practice of dentistry exclusively, and finally the very broad assumption that a complete faculty is inexpedient and unnecessary to the system of dental education.

I have not paused to press the utter incompetency of the proposed adjunct chair to teach all that can be profitably communicated of dentistry to the pupil, by a system of public lectures, and the incidental means of a college, except on the consideration of certain topics, which bear upon it, for I think it sufficiently disposed of in this way. A closer and fuller inquiry, would demand the anatomy of our profession, or a very thorough analysis of it, and a philosophy of education, besides; for which there is just now neither time nor necessity. Indeed, I regard the proposition, which I have been discussing with only one apprehension that disturbs me, (I do not suppose that it will take the place, or exclude, or delay the better method,) but I am a little jealous for the reputation of my profession, perhaps a little over sensitive, for I fear some of that contempt which it once endured, both from physicians and the select few of the most distinguished of its own disciples, will get countenance, and a little longer lease of life, from the notion, that a single man in the first rank among us, would willingly cut the connection of the brotherhood, in seeking honor of association with the medical fraternity, that any one of authority among us should esteem a crippling dependency upon medical faculties more creditable and safe, if *not* more useful, than a generous and brave effort at self-adjustment and self-protection. Perhaps, I should add, the possibility of injury to the interests of the profession, from the apparent concession that there is really *nothing* in it which cannot be fully taught by an accommodation chair, in a medical faculty—except, perhaps, the mechanics and pottery of the trade, which the pupil is expected to pick up in any way he can contrive, or if he is not so fortunate, do without, until he has acquired knowledge at the expense of his patients. It is very possible the public may think so, and not a few medical men, simply because they have bestowed little thought on the subject,

and there is enough of indifference to professional soundness to allow of a shabby compromise of honor and usefulness for the sake of a dernier resort amongst the chances of practice. Dentistry, in my apprehension, is just now in a critical stage in respect to its system of education. It is just in the condition to demand the sacrifice of all prejudice and selfishness from its most competent and worthiest men, and to need the freest and truest services of all that owe it a duty, or can advance its honor and interests. It would not be in good taste to parade the sentiment which impels me to discharge my debt to the fraternity, or it *might* render me the good service of fully justifying me for "showing my opinion also," and excuse, besides, the uncompromising earnestness of its expression.

ARTICLE III.

Iodine in the Treatment of Dental Periostitis and Diseases of the Gums. By James North, M. D., D. D. S., *Bangor, Me.*

I shall introduce as the subject of the few remarks that I shall offer on the present occasion, the history and treatment of several cases, which may serve to illustrate the beneficial action of iodine, in diseases of the teeth and gums.

In the month of August, 1843, I was desired to visit a Mrs. Copland, of Pittsfield, on account of a harmaturia, accompanied with pain in the region of the kidneys She informed me, that her health previous to the last year had been good. In April, 1842, she was prostrated with pneumonia, which she barely escaped with life. From effects, consequent of the treatment of this disease, she dates the origin of her present troubles. Soon after a partial recovery, she was afflicted with neuralgia of the facial nerve, of the seventh and the second branch of the fifth pair of nerves, on the left side of the face. In the early stage of the disease, she had submitted to the extraction of all the teeth in the left side of the upper jaw, to the division of the

nerve, to the operation of alteratives, opiates and tonics, without mitigation of pain or amendment of the disease. In the early part of 1843, she was occasionally attacked with pain in the left lumbar region, of the same character, and occurring at the same hours, with the pain in the face. Accompanying the lumbar pain were other symptoms, indicating serious functional derangement of the kidneys. On the morning of the 22d of August, after evacuating the bladder, she was surprised with fear, to find the contents of the vessel, to be nearly all blood. For this last symptom I was called to prescribe. At this time Mrs. C. was in the 45th year of her age, and of a nervous and scrofulous constitution, she had a care-worn and haggard countenance, indicative of anxiety and long suffering; a fetid breath, caused by carious teeth and ulcerated gums. Her tongue was coated and dry, her pulse weak, frequent and intermittent. The usual remedies for arresting a tonic hemorrhage, were given without any benefit, other than improving the condition of the digestive organs. I now prescribed the iodide of starch, in combination with quinine, every six hours. I commenced with ten grains of the iodide, combined with one grain of quinine, and gradually increased the iodide to one drachm, and the quinine to five grains. I continued this treatment for three weeks, at the end of which time the hemorrhage had ceased, and the urine had assumed its natural color and properties. But the most important result of this treatment was in the improvement and final cure of the neuralgia. This disease had exhibited many of the worst symptoms of the disease designated as tic douloureux. It was confined to the left side of the face in the nerves distributed over the cheek bone, just below the orbit, the upper left teeth and gums, and also in the ear and mastoid process. She had been under the care of Dr. George Gourley of Morridgwork, an ingenious and skilful physician. He had given large doses of carbonate of iron, Fowler's solution of arsenic, quinine, morphia and belladonna. Externally he had used stimulating and anodyne embrocations, blisters, topical bleeding by means of leeches, antimonial and mercurial ointment, and the ointment of veratria. She submitted to this course of dragging

and torturing, with the heroism of a martyr, and without reaping the least permanent benefit. Again and again disappointed in her hope of recovery, losing confidence in her physician, and disgusted with his prescriptions, she abandoned her case to the course of nature. This was three months previous to my first visit. After prescribing the iodine for three weeks, the constitutional improvement was so evident, Mrs. C. was very anxious to continue its use; at the end of two months it was discontinued. The neuralgia was cured, the gums were healthy, the countenance assumed a healthy look, and all the functions were in the performance of their legitimate action. Early in the month of January, 1844, I was again summoned to visit Mrs. Copland. I found her dejected and sorrowful; and was informed that the neuralgia had returned. This time it was located in the left superior maxillary bone, and occurring at 6 o'clock in the morning, and passing off between 10 and 12, A. M. Aware of the unyielding character of the disease, I was not willing to trust those agents that had so signally failed in the first attack; consequently I commenced my treatment with the iodide of starch, combined with quinine, as before. The practice was successful; in three weeks she was discharged from my attendance, without neuralgia. I have often seen Mrs. C., and am happy to say, there has been no recurrence of the disease. Soon after the successful termination of Mrs. Copland's case, I was called to see a Miss Marstin, aged 18 years, for the purpose of extracting a painful tooth; two months since she had partially recovered from a typhoid fever. During the continuance of the fever, she took large doses of calomel; causing extensive ulcerations of the mouth and gums. She had a chlorotic countenance, her digestion was imperfect, costive bowels, together with the suppression of the catamenia; on examining the mouth, I found the tongue loaded with a dark moist coat; the gums were swelled, spongy and ulcerated. The second molar of the right lower jaw, was the tooth selected for extraction; it was not carious, but tender when touched, the pain was of a periodical character, she had been afflicted with it three weeks preceding my visit. I explained to Miss M. my opinion of her case, and

advised a careful regimen, occasional laxatives and quinine, combined with iodine, as in the case of Mrs. Copland. The pain was relieved immediately, and after a continuance of the prescription for a month, she was restored to her usual state of health.

Rheumatic periostitis is a disease of common occurrence, and when the cause can be traced to the excitement of a diseased fang, or a cold, can readily be cured, by extracting the offending tooth, or the administration of simple remedies. But there are cases that present many embarrassments, both as regards diagnosis and treatment. The following case may serve to illustrate this position.

In April, 1844, I was requested to visit a Mrs. Foss, on account of a painful inflammation of the right lower jaw. The disease made its appearance in the early part of November, 1843, without any assignable cause. There was a pulsating and constant pain surrounding the first molar tooth, of this side, and after a few days, a secretion of pus. Her physician thought this might be the exciting cause of the disease, and it was extracted. No relief being afforded by the operation, on further examination, it was thought advisable to extract the remaining molar teeth. This measure was attended with no better result than the first extraction. She now applied to another physician, suspecting constitutional vice as the remote cause of the disease, he advised constitutional remedies. She was put upon an alterative and tonic course. The gums were leeched, and blisters applied externally over the region of the disease. This course was continued for a few weeks, but the disease proving obstinate, was abandoned. Soon after she applied for my advice. I found the gums inflamed and indurated, and the surrounding parts implicated in the diseased action. The tonsil, submaxillary and parotid glands were enlarged, hard and painful. The lower jaw was nearly closed, and deglutition difficult and attended with pain. I supposed the disease to be of a rheumatic origin, and its obstinacy to be dependent upon scrofulous or mercurial taint. I prescribed a judicious diet, occasional purgatives and the iodide of potash, in combination with syrup of

sarsaparilla. To the surprise of myself and patient, the disease soon lost its painful character, and in less than a month it was completely eradicated.

From the history of the above cases, and others of a like character, that have occurred in my practice, I have come to the conclusion, that for the cure of neuralgia in persons of a scrofulous habit, or predisposed to it, or occurring in persons broken down by an abuse of mercury, there are no remedial agents so effectual as iodine, in combination with a tonic; I prefer the iodide of starch, from the fact, that it can be given in larger doses than in any other combination of this agent; it is not disagreeable to the taste, and can be administered in union with quinine, without injuring the properties of either. And in rheumatic diseases, acute or chronic, after proper depletory measures, I have rarely been disappointed in effecting a cure with the iodide of potash.

ARTICLE IV.

Cheap Artificial Teeth, and Cheap Dental Operations in England.

As observed in my last paper, the dental profession in England has, from the peculiar advantages it seems to hold out to indolence and rapacity, become a kind of *dernier resort*, for all those who from want of inclination for, or success in, the callings to which they were originally educated, have determined to abandon them for some other; and hence it is, that it is made up of a heterogeneous mass of individuals, drafted from all kinds of trades and professions, who have embraced it, not because they have any particular vocation for the art, or fitness for its practice, but simply that they consider it a light, easy and profitable profession, in which many have acquired fortunes without any remarkable amount of talent, and which in a common

way makes few calls on the convenience or comfort of the practitioner.

It is scarcely surprising then that among the host of dentists who daily inundate the metropolis, many should be found, who, if ignorance be bliss, must be in a state of perfect beatitude; in short, whose whole qualifications for the profession consist in getting out in some way or other, a natural tooth, and making and adapting, after a somewhat rude fashion, *very* artificial ones, who know nothing of the scientific or surgical branches of the art, a perfect acquaintance with which forms the dentist, properly so called, and to use an Irishism, less of its physiology. These men generally commence practice without having received what, by any extension of courtesy, can be considered a professional education; their whole stock of trade consisting of a module of empyrical knowledge, with a more than tolerable share of impudence, and armed with this and aided by a series of five shilling advertisements, they sometimes crawl into a kind of disreputable practice. Even this, however, they could not effect, did they not bring cheapness to their aid, and offer to do for shillings that which a respectable practitioner could not, and would not, do under as many pounds, and this with the fact staring them in the face (for they cannot be so completely ignorant of the prices of the best materials though they never employ them) that putting artistic skill and manipulations out of the question, the expense of proper materials alone, would actually *cost them* more than they charge for every thing inclusive, and that a single tooth, or any number of teeth, cannot be made and properly finished but at a much higher price than they charge, even were they to give their valuable services and could live on the honor of operating, that there would actually be a greater outlay for material than the cheap, very cheap, dentists receive for their time, labor, skill, &c. Thus they must either cheat the public with promises, or must have the power, like the Irish huckster, to buy and sell and live by the loss.

But these gentlemen again, not content with supplying artificial grinders, at a price which, to use their own words, brings

them within the most limited means, offer their services to stop teeth and perform various other operations on equally liberal terms. And some of these individuals not only offer to stop single teeth at 1s. 6d. each, but actually offer to do business wholesale, to take the whole mouth, and stop all the teeth that may require it, from three to two and thirty, at the very moderate charge of 10s.—while some more liberal still offer their wares and services at the same time, and sell the material for stopping, with such directions as will enable any man to plaster his own grinders, at 2s. 9d. stamp included. For the sake of contrast, I will place in juxta position, with one of these cheap men, a respectable practitioner who does not advertise, and who will not plug a tooth under the regular fee of 10s. 6d. to two guineas, or in other words, who will not perform services that require great skill, involve some responsibility, demand the sacrifice of an hour to two hours and an half, (to say nothing of material, which in some cases forms a very considerable item,) without a fair and proper remuneration; and I will ask which is likely to be the honest man, he who *professes* to work at somewhat about plasterer's wages, or he who consults the usefulness and dignity of his profession, and insists on such a remuneration as is consistent with his station as a gentleman, and sufficient to insure a proper performance of the operation.

Again, your Jones', Thomas' and Read's, cum multis aliis, *profess* to insert a single tooth for five shillings, nay, for three and sixpence, and decorate the whole mouth with a complete set of grinders, warranted to divide a spoonful of calves-foot jelly, for the small sum of five pound. While the non-advertising portion of the profession will not insert a complete set for less than twenty-five or thirty pounds, or in other words, four or five times as much as these cheap dental costermongers.

All this of course is understood by the profession, who know what the material costs, and what is and what is not, a fair remuneration for skill and sufficient to ensure competency and honesty; but with the public the case is very different, and a non-professional individual, who is apt to class all dentists in the same category, must be somewhat puzzled to know how

one person can venture to charge twenty-five pounds for services and material, which another offers to supply for five pounds, and that, according to his advertisement, in the best manner and of the best materials. He either concludes that in the one case he is paying for *reputation* rather than talent, or like an ass between two panniers cannot tell which side to turn, but fancying one of them must be a swindle, cannot decide whether it is that the cheap man cannot perform the services in the manner or at the price he promises, or that the dearer one charges most exorbitantly, for the commodity of the teeth on the one hand, and for his services in plugging them on the other—and as in the estimation of the ignorant, teeth, whether cut out of the hoof of a horse or the horn of the hippopotamus, whether manufactured of the same crockery as his cups and saucers or emanating from the laboratory of a Stockton or an Alcock, are still but teeth; as in his estimation the metal, whether gilt copper, pinchback or standard gold, still comes under his denomination of gold, and as he can scarcely tell the difference, whether the work be of the highest dental finish or about equal to the manufacture of a cart wheel, the chances are that he gives a verdict in favor of imposition, and adds another to the gulls of cheap dentism.

That such would be the opinion of nine out of ten who read the cheap dental advertisements, and compare their prices with those of the more honorable and legitimate practitioner, I have no doubt, nor is it surprising that it should be so; the public, generally speaking, are not apt to reason much on these matters, and in most cases are not aware that one practitioner is more respectable or honest than the other; they are both members of the same profession, both dentists, perhaps both *surgeon* dentists.

Could any respectable member of the profession place himself in the same relative circumstances as regards any other trade, (for, as is generally practiced in England, it is honored by being called such,) I feel convinced that he would arrive at precisely the same conclusion. But let the non-professional really try the difference practically, and he will no longer feel surprise

at the low charges of the one party, or the more ample ones of the other—unless he has a preference for the taste of copper-ore, especial delight in being salivated, or thinks it a luxury to have his mouth filled with coarse crockery, or animal matter that decomposes as rapidly as fish bone. R.

[To be continued.]

ARTICLE V.

Filling Teeth over Exposed Nerves. By W. H. Elliot, D. D. S., *Member of the Medico-Chirurgical Society of Montreal.*

It is not the writer's intention in the present instance, to enter into the details of the operation of filling teeth on the principles that govern it, except so far as is necessary to explain his practice in cases in which it becomes necessary to fill over the exposed and living nerve. He was not aware, until he read the interesting discussions which took place at the last meeting of the American Society of Dental Surgeons, that his practice in this particular was so unlike that of other dentists, or at least of those whose methods were made known on that occasion. This difference consists principally in his laying the gold in all cases directly upon the living nerve, and in perfect contact with it, over the whole of its exposed surface.

The writer believing, that when any space is left between the bottom of the filling and the surface of the nerve pulp, the least increase of circulation forces the delicate living membrane of the tooth through the opening, in the partition which separates the natural from the artificial cavity, and that the sharp and irregular edge of the bone around this opening lacerates the membrane, and increases tenfold the slight but unavoidable irritation which follows the exposure of the nerve; this, or any other accident which might call a little more than the usual quantity of blood into the vessels of the nerve, would have the same effect. It is upon this belief that his present practice if founded,

and it gives him much pleasure to state, that it has been far more successful in his hands than any other, and he has no doubt that it would be so in other hands if fairly tested.

The statement made by Dr. Rich before the society, that "with a good light, a steady and delicate hand, the membrane can be exposed five times out of six without hemorrhage" is perfectly correct. When this part of the operation has been successfully performed, and the gold properly introduced with a good non-conductor under it, there is nothing to fear from the operation itself.

The writer's method is as follows: He first prepares the orifice and walls of the cavity for the gold, and then removes the softened bone from the bottom of it, as far as practicable, without interfering with the nerve, with the ordinary instrument; but the excavator with which this part of the operation is completed, and the nerve laid bare, should be made, firstly, as light as possible, the vibrations of a heavy instrument are liable to turn down minute spicular into the nervous pulp from the edge of the bony partition. Steel handles will not do. Secondly, the point of the instrument should be curved to an angle of about forty-five degrees from a line with the handle, and when in use, it should be *drawn lightly* over the bone, not pushed, and always in a direction from the neck of the tooth towards the grinding surface; if the cavity be on the top of the tooth, the instrument must be then drawn from the centre of the cavity towards the walls, because it always cuts the bone more smoothly, and with less pain in this direction than in any other. Thirdly, the point of the excavator for large cavities should be at least one-eighth of an inch in width, so that in passing over the exposed nerve it would be too wide to drop into it, the edge should be slightly curved, highly tempered, and as sharp and smooth as it is possible to make it on the finest stone. Under such an edge, the nerve may be distinctly seen to yield without being injured by it, while the surrounding bone is carried away.

As a non-conductor, when the cavity is comparatively deep, the writer prefers asbestos, *enveloped in a few thicknesses of*

gold foil, formed into a yielding cap, sufficiently large to retain its position; this should be gently but firmly pressed down with a plugger large enough, if possible, to cover the whole of the cap, and warmed to the temperature of the tooth.

Whatever the non-conductor may be, there should always be one or two thicknesses of foil under it so as to secure a smooth surface of gold in contact with the nerve; from such a surface the nerve will bear considerable pressure without evil consequences, while the slightest spicular of bone turned into it from the edge of the partition is sure to destroy it.

Within the last year the writer numbers but two cases in which irritation advanced so far as to become troublesome to the patient; in both instances, perfect and permanent relief was obtained by the use of leeches and a mild cathartic.

There can be no doubt that the time is near at hand when the treatment of exposed dental nerves will be, in some degree, revolutionized. The desire for improvement, which characterises the leading spirits of the dental profession at the present day, will not allow them to remain long satisfied with a position which, to say the least, is always uncertain, if not in a majority of cases unsuccessful; and, if in the end they find that their best efforts to protect this sensitive organ from harm, have only been so many obstacles thrown in the way of the final success of the operation, it will not be the first discovery of the kind made in either branch of the healing art.

At all events it is to be hoped that the spirit of inquiry exhibited at the last meeting of the society, will not be allowed to subside, until some signal improvement have been made in this operation.

ARTICLE VI.

Morbid Sympathies of the Teeth. By JOHN A. JOHNS, M. D., D. D. S. *Pleasant Grove, Va.*

IF we cast our eye over the human body, we see that the latter is made up of a series of separate and distinct organs or

parts, each designed to execute a separate and distinct function, for which its structure and relations are admirably adapted. These multiple organs, differing in every possible way from each other, make up one complex and harmonious whole, (of which, each organ forms an indispensable part,) and is endowed with what Bichat is pleased to denominate "an aggregate of those functions by which death is resisted"—i. e. life. Between all these organs or parts, there exists an intimate relation and mutual dependence, each one taking cognizance, as it were, of the condition of all the rest; and hence no organ can be diseased long without involving others. This sympathy between one part and another, situated at a distance, is due to the peculiar endowment of the nervous system, by virtue of which, it transmits sensations and impressions, and if all the organs of the body are not dependent on it for the discharge of their respective functions, they are greatly influenced by it, as the functions of circulation and respiration.

These sympathies may be propagated or extended from one organ to another in several different ways, the principle of which are, reflex action, continuous sympathy, contiguous sympathy, or in a way which, in the present state of our knowledge, is not very explicable. And in some of the lower animals, parts sympathise where there is obviously no nervous centre and probably no nerves. (Dunglison.) Some important functions are performed through reflex action, as the function of deglutition, the contractions of the iris in responding to the impressions of light made on the retina. As examples of continuous sympathy, may be mentioned the effects of diseased teeth and gums on the mucous lining of the stomach and intestines. As examples of contiguous sympathy, may be mentioned the influence of substances in the duodenum, stimulating the liver to action, and cathartics acting on the rectum exciting the uterine system.

Sympathies may also be remote, as between the internal mucous membrane and skin (this is termed remote sympathy, though the membranes are actually continuous) which is evinced by the profuse sweats that follow the introduction of draughts of water into the stomach. There is also an evident sympathy between the kidneys and skin, also between the lungs and skin.

Organs also sympathize through similarity of functions, hence one eye cannot be seriously diseased without affecting the other, though this is not the only way the eyes are sympathetically connected. This remark is also applicable to the kidneys, and to some extent to the teeth.

Nor are these sympathies less active during a morbid, than during a healthy, condition; a knowledge of which must form part of the basis of all rational practice, and without the dental surgeon and practitioner would have to content themselves with a practice strictly empyrical. And possibly a knowledge of morbid sympathies can never do more good to fallen humanity, or bring more credit to the practitioner than when applied to the teeth, as these organs have quite an extensive range of sympathies, influencing the general health sometimes to an extent little suspected. And on the other hand, they readily take on morbid action through sympathy with the general system, in a manner we will explain presently. This is particularly the case during their formation, as during this period the system is more irritable and the symptoms more active than in after life. At this period, disease may be stamped on them which can never be eradicated, owing to their peculiar and inherent laws of organization, differing in this respect from other tissues, which may wholly or partially recover from disease impressed on them during their formation, or during utero-gestation. Diseases may be transmitted hereditarily in the teeth as in other organs.

The constitution of the teeth may vary in different individuals from a predominance or deficiency of either the earthy or animal constituents, owing to an interruption in the nutritive function during their formation. When there is a predominance of the earthy salts, they rarely decay, and are of a dull white color, short and thick. But when the earthy material is deficient, the animal predominating, they are readily acted on chemically, and hence may be influenced by any disease that produces a change in, or vitiates the secretions of the mouth. Teeth of this description are very liable to atrophy. It is probable that the denuding process depends in a great part on imperfection in the

formation of the teeth. The permanent teeth may also be morbidly impressed during their early development by disease of the deciduous teeth being extended to the pulps or investing membrane of the former. There are other affections of the teeth, such as abnormal relation and position, a third set, &c. which must be classed rather as freaks of nature, than referred to any determined or known cause, or condition of the system.

This imperfection in the constitution and organization of the teeth is readily accounted for by remembering that they are secreted from the blood, and that the condition of this fluid is always influenced by any disease involving the system at large, deranging the function of the chylopoetic viscera. This is very liable to occur in hereditary predisposition to strumous or phthisical diseases. The occurrence of acute diseases, as measles, small pox, pertussis, fevers, &c. may so derange the function of nutrition, as to impress disease on the particular teeth that are undergoing ossification at the time, while the other teeth may be healthfully developed. In this way we account for the disposition of the teeth to decay in pairs.

Although the teeth during life participate in the healthy or diseased action of the general system, yet this does not occur on account of any change that takes place in the physical organization or structure of the tooth, but by the change produced in the fluids of the mouth, causing them to act on the teeth chemically. This is evident from the fact that when a tooth is once formed it remains permanent, not being subject to the laws of disintegration and renewal as other structures are.

There are many other diseases of the teeth and gums associated with constitutional disease, such as the effects of mercury on the gums and alveolar processes, protrusion of the teeth by deposition of ossific matter in their sockets, mechanical injuries of the teeth, &c. but which do not come within the scope of this article.

Having considered the extensive and intimate sympathetic relation of the various organs of the body, and the morbid relation of the teeth and system at large, as regards the influence of the latter, in a diseased condition, on the former, there next

remains to be considered the influence of the former in a diseased state on the latter.

Some of the diseases of the teeth affect the general health very little, if at all, as the denuding process, atrophy, &c., but unfortunately this is far from being true of all, as diseases of these organs are readily propagated or extended to other parts, involving particularly the nervous and vascular system. Nor is this at all strange when we bear in mind the importance of these organs in preparing the food for digestion, as to them is trusted the functions of tearing and comminuting the food that it may be mixed with saliva of the mouth, (which is an important step in the process of digestion,) and more readily dissolved by the juices of the stomach. And disease of these organs readily affects the salivary glands, deranging their function and rendering their secretion unfit for the use for which it is designed. This fluid may contain an abnormal quantity of earthy salts, which being deposited on the teeth as salivary calculi, produces disease, irritation and inflammation of the gum, and mucous membrane which may result in loss of the teeth. And these diseases of the teeth and gums, connected with incapacity on the part of the teeth to prepare the food for its reception into the stomach, may, and often does give rise to disease of the latter, and in fact to the whole digestive apparatus; hence dyspepsia, emaciation, depressed spirits, melancholy, &c. And thus a condition of the system which may predispose it to any of the diseases common to fallen humanity. And all this train of morbid phenomena may be traceable to a single carious or necrosed tooth. The nervous system of females sometimes becomes so irritable through sympathy with the diseases of the teeth, that the slightest excitement cannot be borne without the occurrence of serious nervous symptoms.

Of the diseases produced by or connected with the teeth, one not to be overlooked, is neuralgia. This affection often takes its origin in a carious tooth and is a source of an immense deal of pain and annoyance to the patient. The indication clearly is to remove the offending member. The manner in which a diseased tooth may produce neuralgia of the face becomes quite

plain, when we remember that the same nerve gives branches to both, the affection being reflected along the branch supplying the former, and is reflected along the branch supplying the latter, giving rise to pain in any part supplied by it. Many such instances of disease are found in the system—thus the phrenic nerve gives some branches to the shoulder, and also communicates with the nerves supplying the cœliac aris, and in this way is explained the fact that in disease of the liver we often have pain at the top of the shoulder. The pneumogastric nerve, from its relations, may have something to do in the production of this phenomenon.

During dentition the liability to disease is very much increased, the disturbance from this cause frequently producing engorgement of the brain, depraved nutrition and sometimes convulsions. And where there is an hereditary predisposition to phthisis or struma, the constitutional disturbance, produced by dentition, acts as a powerful exciting cause to their development. The ravages of any disease, cæteris paribus, are much more dangerous, occurring during dentition, than at any other period of life, except probably, in extreme old age.

The constitutional and local disturbance produced by disease of the teeth, are beautifully summed up by a modern writer as follows: "Affections of the teeth are not connected only with the inconvenience, co mfrt and good looks of a patient—but with his health and very existence. The cause sometimes remote, sometimes tolerably direct—of many affections, implicating the general frame, as well as important parts of it, proceed entirely from the contents of the alveoli. Bad teeth are frequently the cause—the sole cause of violent and continued headache, of glandular swellings in the neck, terminating in or combined with abscess; of inflammation and enlargement of the tonsils, either chronic or acute; of ulceration of the tongue or lips, often assuming a malignant action from continued irritation; of painful swellings in the face, tic douloureux, pains in the tongue, jaws, &c.; of abscess and sinus of the cheek; of enlargement and change of structure in the gum, which may lead to dangerous tumors of the bone; of disorder of the stomach, from

affection of the nerves, or from imperfect mastication; and of continued constitutional irritation, which may give rise to serious constitutional disease."

ARTICLE VII.

Medical Ethics.

We extract the following eloquent and just observations relative to the intellectual and moral qualifications which are essential to the worthy exercise of medicine as an art, to the proper social position of the medical profession, and to the maintenance of desirable relations among its members, from an interesting editorial article in the Medical Times. (Dec. 21st, 1850.) *Ed. Med. News and Lib'y, Phila.*

"First, then, we affirm that a high personal character, an elevated tone of feeling, and careful moral culture, are absolutely requisite to form a worthy practitioner of medicine. There is no profession which is so much calculated to try our moral qualities, by bringing us into complex and difficult moral relations with others. The patience and temper of the medical practitioner are continually tried by the fretfulness of illness, by the monotony of iterated complaint, by the garrulity of age, by the childishness of imbecility, by the impertinences of the vulgar, the curiosity of the idle, the prejudices of the ignorant. His equanimity is invaded by the anxieties, the misgivings, the despondency, the agitation, of those who suffer, and of those who are interested in them. His presence of mind and self-dependence are severely tested by sudden dangers, and startling emergencies, and fearful perturbations: by the casualty which crushes manhood in its prime of vigor and usefulness; the attempted suicide; the mental tempest, and moral wreck of madness. His fortitude and his confidence in his own art are sternly taxed by the frequent frustration of his best and wisest efforts. His

cheerfulness and tranquillity of mind are overcast by the clouds of sorrow, by the dull night of hopelessness, and the shadow of the tomb settling on all around him. Amid all these troubles and contingencies he must stand unshaken, yet sympathising; serene and gentle, yet active, authoritative and energetic; anxious, and often perplexed himself, yet guiding others in their perplexity, and cheering them in their despondency—himself too heavily laden, yet aiding others to sustain their burden.

"The medical practitioner also must be in the highest degree discreet and trustworthy; he is the depository of more secrets even than the priest, and the peace of many families, and thence the welfare of whole communities, may be entrusted to his keeping.

"Is a man of a narrow heart, of a groveling mind, fit for such ministrations, or worthy of such trust? Surely not. We have here need of one whose being is lofty and spiritualized—purified from the dross of the world—conscious of his high mission, and of his own capacity to fulfil it.

"If there be any truth in these views, it follows that a most essential part of medical education consists in preliminary moral culture; and that, in fact, the very first inquiry to be made in reference to the candidate for medical honors or medical licenses, is, not whether he have studied classics or philosophy—not whether he understand anatomy or chemistry—not whether he have heard lectures or walked hospitals; but whether he can produce unquestionable testimonials of high personal character, and proofs of fine moral culture—whether, in a word, there be good reason to believe that he is individually fit for so serious and so responsible a calling as that of medicine."

Dr. C. A. Harris—Dear Sir—I have extracted the foregoing paragraphs upon medical ethics from an editorial in the Medical Times, republished in the Medical News and Library, and request their admission into your pages, not only on account of the rare excellence of the sentiments which they contain, but also, and especially, for the reason that they are as much needed, and as applicable in all essential respects to the profession of dentistry as to that of general medicine. The dentist, in pro-

portion to his attainments in his science, becomes, of necessity, the medical adviser of his patients. Where he possesses the necessary surgical knowledge, his nice practice and long observation in all the numerous affections of the mouth, teeth, and their dependencies, qualify him for, and his legitimate practice involves him in, the general treatment of his cases both constitutional and local. Indeed, as the study and practice of the healing art now stands divided among its various classes of practitioners, it often happens that the physician and surgeon must call upon the dentist for his aid and direction, while his dependence upon them can scarcely happen, except for the reason of his own professional incompetency. Medical men do not study, nor would it be easy for them to acquire our branch of medical science, but, without a liberal acquaintance with their studies, *we* can practice it only in its lowest and most imperfect offices. The same is true of the oculist and the obstetrician, when their respective sciences are separated, as dentistry from its nature always must be, into distinct specialties of practice. It is because dentistry thus extends into the general domain of medicine for all its principles, and for no inconsiderable share of its practice, that its general institutes and ethics must be regarded as substantially the same. But, my present object is, first, to call attention to the just and beautiful sentiments of the extract; and next, to suggest, for the reflection of your readers, another aspect in which purity and integrity of moral principles should be regarded as indispensable qualifications of medical character. I allude here, not to the direct service which moral excellence renders in the discharge of duty, or to the immediate influence of conscience upon conduct, but to that more subtle, though not less certain action, either for good or ill, of the habitudes of the heart upon the functions of the head. I refer to the tone and temper of mind, to the strength and accuracy of perception and judgment, which the intellect borrows from a thoroughly single honest and earnest soul; and to all that it suffers and loses through the absence of high and pure principles of life. Classification separates mind and feeling for speculative purposes, on good logical grounds; but they are never

separated in act and fact without mutual and equal injury. The passions and emotions are the springs of inspiration and life to the gifted mind; and genius takes its power and quality from the heart. The difference between the artist and mechanic may be in *favor* of the duller clay in matters of sheer intellect, but the diviner powers commissioned to serve the world in its highest needs—all that makes the grandest difference between men, is just the difference in their truth and purity of their affections. Other distinctions are not denied, but however considerable, they are only secondary, the distinctions which grow out of the heart, these are primary and absolute. The affections are, in their very nature, the springs of action to the intellect; and it derives all its energy and efficiency from their incitement. If the sensibilities are dull and the feelings sluggish, thought grows sluggish also, and the whole action of the understanding turns heavily upon its wheels. If the heart is selfish, narrow or corrupt, every faculty of the mind feels it like a malady, and betrays it in its perversion; but a pure heart, ennobled by high aims, illuminates and energises with all the power of a natural religion, its associated intellect. Such is the simple philosophy of our nature, and consciousness gives instant and direct testimony of its truth. Thought strongly moved, aspirations nobly aimed, may receive light and knowledge as an influx from without, but the force that animates them is felt to be an innate force. The feelings serve as a medium of reception to high thought, and they refract and distort, or concentrate and intensify the intellectual rays according to their *own* state and structure.

The poet's muse is something more than a figure or memory of an old-time superstition; it is the expression of a conviction, and answers to a fact in his consciousness; the religionist's rapture of emotion opens all the supernatural to his imagination; the artist finds the infinite in the depth of his own sentiments, and all men in their several degrees, feel the elevation which the moral impulses and the inmost instincts of the heart are capable of affording so richly to the action of the understanding. Especially is the truth of this idea obvious in the applica-

tion I would make of it to the duties of medical life. It is here, if any where, that an honest heart can render service to a tasked mind, and it is here eminently, that the understanding demands consecration from high principles, both for defence and for support. The selfishness, indolence, bigotry and heartlessness that could be better allowed any where else, because less injurious in any other sphere of duty, in medical practice finds easy access and safe shelter. Ignorance and recklessness have greater exemption and more temptation, and the devotion of the best qualities and acutest powers are less conspicuous than in any other service. There is less competency in the criticism, less adequate appreciation of the real merit of a medical man than of any other profession. He may work miracles of skill in the very spirit of an apostle, and those who love him best may know but little of the facts. The comparative feebleness of these influences upon him are indeed replaced by such ennobling confidences, such generous trust, and supporting love and faith in the subjects of his ministry, as have power to fence him round with something more than priestly sanctities; and the hospitalities of heart and home accorded to him are so rich and perfect that they compel an answering fidelity and purity of feeling; but lacking, as his profession does, that sharpness of oversight and observation, that influence of opinion which keeps the intellect of the clergyman, lawyer and politician on the stretch, he needs, more than they all, the prompting, directing and controlling force of strictly moral motives and urgent sentiments of duty to hold him on to the task and urge him on to advancement. Mere mediocrity, ordinary competency and routine punctuality, will keep him safe from the censure of his patient and the public; and his mind needs, therefore, all the more, the truest and severest self-direction and self-government. Moral purity in the conduct of his social life is almost insured to him as a necessary grace of his profession; but no profession needs so much the reflex agency of high integrity of heart upon the mental faculties, and in none are the collateral helps and checks so few and feeble. The mind of the physician is less helped

by the discipline of a just criticism from without, and, therefore, needs the more, the higher and purer impulses from within. He needs an enthusiasm, an energy of virtue which shall *well* supply the place of ambition and the discipline of opinion to other men, and endue *him* instead with a principle and a purpose which shall subdue all his selfishness of feeling, support his strength of body, and inspire his faculties of mind.

E. T.

ARTICLE VIII.

On the Comparative Advantages of Wide and Narrow Plates for Artificial Teeth. By J. W. CRANE, M. D., *New York.*

MESSRS. EDITORS:—I proposed in my last communication, to give some further hints on the subject of using wide plates for the purpose of adhesion, but sickness, and death in my family, has prevented me from doing it in due time.

I have never heard any argument in favor of covering the whole surface of the palatine portion of the mouth, except *to produce greater adhesion.* I have never had occasion to use a wide plate for that or any other purpose, except, where the palatine plate of bone was wanting, and then, it was used for the purpose of correcting the articulation in speaking.

Not long after these plates came into use, I had occasion to reduce their width to make them comfortable, or to throw them aside altogether, and make others of less width. This was sufficient to convince me, that the new plan was inferior to the one I had adopted.

I know of no better plan to test the utility of any, so called improvement, than to weigh the arguments in favor, and against it. We have already mentioned the only argument, that we know of, in favor of the wide plate, viz. *to produce greater adhesion.*

In the first place, does it produce the desired object, more

effectually than the narrow plate with a chamber, under the linings of the teeth?

2d. Which is the most permanent in its action?

3d. If the narrow plate injures the taste, will not the wide one destroy it?

1st. I have never seen a wide plate adhere to the gum so firmly as the narrow one, with the chamber under the linings, which I have used since 1836. Some (appear to) use the wide plate for the purpose of distorting the anatomical form of the mouth by a chamber nearly in the centre of the plate; others bend the posterior edge of the wide plate, and form a partial chamber of nearly its whole surface.

2d. The wide plate must, of necessity, be temporary, in what it is designed to accomplish. No one has ever seen a mouth, after the teeth were extracted, that did not change by absorption, and they will continue to do so for years; after the first set are inserted, especially in the young subject, they change more or less after the teeth have been removed ten years. The absorption takes place on the alveoli, and not on the osa palati where the wide plate rests. This bone never absorbs except when diseased, and must therefore be the only resting place of the wide plate, when the alveoli has retired.

3d. Taste is injured, in some cases, by a plate one-fourth of an inch in width, when it has been carried back to the first molar tooth. There are persons who have lost their taste without any artificial means, by some physical derangement of the organs of taste. There are others who care but little on that subject, so long as the food keeps the soul and body united; but there are not a few whose taste has been destroyed (if we can rely upon their own testimony) by the wide plate.

Physiology teaches us that the sense of taste is seated chiefly in the nervous papillæ of the tongue, which are excited into action by contact with the palatine portion of the mouth.

The sense of taste is undoubtedly combined with the sense of touch, and if the latter is destroyed by the interposition of a foreign substance, how much more is the former affected by the same cause.

ARTICLE IX.

Valedictory Address Delivered to the Graduates of the Baltimore College of Dental Surgery, at the Commencement, held March 28th, 1851. By ELEAZAR PARMLY, M. D.

GENTLEMEN GRADUATES:—It is a matter of no less regret to me, than it is to you, that illness has prevented Dr. Harwood, of Boston, from discharging the duty assigned to him for this occasion. We were all rejoiced that the appointment was so cheerfully accepted at the time, and delighted with his kind response when the request was presented to him. Another cause of no less regret to you, to the faculty and to myself, is the absence of Dr. Gardette, of Philadelphia, (occasioned by the severe illness of Mrs. Gardette,) who has for several years honored this institution with his presence, and cheered the hopes of the graduates by his kind and hearty approval of their efforts and creditable attainments in their professional studies. With the expression of his regret at not being able to be present, he desired me to express also his best wishes for all who are in any way connected with the institution.

Under these unexpected circumstances, it was not without hesitation, that I consented to speak to you, remembering how ably and with what benefit to the graduates, and to the profession, and with what thrilling interest and pleasure the audience listened to the discharge of that duty last year, in the address of that bright ornament of science and of the dental profession, Dr. Hullihen, of Wheeling.

I knew how much the faculty, the graduates and the profession had a right to expect, and would have received, from the able pen of Dr. Harwood, who, independently of his high attainments in all that appertains to medical and surgical science, has been one of the most highly distinguished men in practical dentistry known to our country—when I say *that*, it will be understood that he is not surpassed, if equalled, in any other country.

The deductions from such knowledge, and from such experience, would have been a rich feast to you, as well as to myself,

and would have furnished a bright star from an eastern sky to be placed opposit the dazzling one we beheld last year from the west, to cast their radiance upon each other, thereby developing more perfectly the beauty and brilliancy of both.

It seems proper that the last advice given to you on leaving these halls of study, to enter upon the practice of your profession, should come from just such sources, and from just that kind of knowledge and experience which have enabled their possessors to overcome all difficulties, and place themselves at the very summit of professional distinction, and at the very head of social relations and intellectual associations; and I wish that I could cast one ray of light upon these polished columns of our professional edifice, to be reflected upon you, and impress your minds with the truth, worth, and consistency of their individual and respective characters.

Those of us who have passed through the difficulties of successfully establishing ourselves in professional life, can deeply and sincerely sympathise with you in the mingled feelings which must necessarily crowd upon you at this interesting and eventful period. The bright and joyous hopes of success—the dark and desponding fears of disappointment, each in their turn, gaining the ascendancy over the mature thought and deliberate calculation. The pain and regret at separating from your respected instructors, and fellow students, probably to meet no more on earth—your impatience to commence the arduous duties of your profession—the doubtful suspense, the formidable opposition, and the severe scrutiny to which your practice and your labors will be subjected, must be common to you all, and give rise to conflicting emotions in the bosom of each one of you, who are now about to engage in the conflict of professional life, which will either result in the attainment of honor and fame, bringing credit upon yourselves—pride and gratification to your friends—praise and distinction to your teachers, and honor to this college. Or, on the other hand, in that ignoble defeat which will involve not only your own character, but the feelings of your friends, the good will of the profession and the good name of our cherished institution. Let these considerations,

my young friends, stimulate your exertions—excite your ambition, and lead you to prefer virtuous industry, with its slow but sure and just rewards, to the uncertain glitter which folly, fashion and extravagance may throw around you, and which may ultimately allure to hopeless ruin. Avoid then, I pray, as you would avoid disgrace, despair and death, every kind of licentiousness and unbecoming dissipation, for they often, in their effects, lead to results, which to friends, family and reputation, are as terrible and as much to be dreaded as death itself, in its worst consequences. There are very few if any professions in human society, in which sobriety, purity, honesty, industry and untarnished honor, are more essential to professional success than that of dental surgery.

You have now completed your course of preparatory study and your examining committee have, with pride and pleasure, witnessed the creditable manner in which you have sustained yourselves under a careful and rigid scrutiny—you have had conferred upon you, by the authority of the state and of this college, the degree, which, by legislative statute, declares you "Doctors of Dental Surgery." The very title implies that you are thoroughly acquainted and carefully instructed in the sciences which more immediately have a bearing upon, or are connected with your future practice as dental surgeons. And it will become you so to demean yourselves in the discharge of all your duties as to convince the world that the title has not been unworthily bestowed. This diploma, which is an evidence of your qualifications, will serve you as a letter of unlimited credit, to draw at will upon the confidence and support of your fellow citizens; and may no act of yours cause this credential to be slighted or dishonored, or those who have confidently subscribed their names to it in your behalf, to be made to feel that unworthiness attaches to any one bearing the honors of this college, which, rightly regarded and improved, will be a passport to future success, and a perpetual recommendation to you throughout the world. But its influence cannot be maintained without, on your part, a strict correspondence of life and conduct, and that correspondence will consist of, and depend upon, your professional

intelligence—your energy, application, and the strictest purity and integrity, and upon your careful investigations into what is true and what is false in practice—discarding the one and pursuing the other in despite of all opposition, and all prospect of gain, and let every day's practice add to your stock of knowledge.

It is but a few days since I heard a lecture in New York, from the justly celebrated Mr. Silliman, professor at Yale College, who informed his hearers that he had witnessed the rise and progress of the science of geology in this country, from its earliest dawn to the present day, and that his own life embraced the whole period of the existence of that science as a branch of collegiate study. Many of us can say the same in relation to dental surgery as a science, for it was not until the establishment of this school that any organized system of study was observed, or even thought necessary by the public; yet there is no department of learning in which greater advancement has been made, than in that which relates to dental practice, and I cannot better illustrate this truth than by saying, that after I returned from Europe to New York, probably, in the year 1822, a lady, in speaking the praises of her dentist, one, too, who had ranked the first in that city, said, that he had never studied the profession, nor for him was it necessary, as he was a "*natural dentist.*"

This will give you an idea of the existing state of dental science, and of public opinion in relation to it in New York, when it was at that time commonly supposed that "pulling teeth" was the chief employment of the dentist. I am sorry to say, that these "natural productions" have not altogether ceased growing, either in the dental or in the medical profession. Such is the fortunate condition of our highly favored country, that a rapid growth or increase is going on; and such is the accommodating disposition of some of our kind hearted people, that they swallow every thing that comes in their way, and permit their dentists, with or without recommendation, to fill their teeth with all sorts of mineral substances, from crude mer-

cury down to pulverized stone—and their doctors to fill their stomachs with all vegetable mixtures, from the balsam of the beautiful and majestic wild cherry, down to the almost inconcievably small seed of the modest and shade-loving lobelia, and thus rejuvenate themselves, in thought, at least, on "life pills" and "phenix bitters." In our own department, this natural state of things has very much improved since the introduction of amalgam, whose remarkable transforming power has been known to change, in a short time, such men as rank with horse jockies, watch thieves and bigamists, into good and honest, as they are called, "AMALGAM DENTISTS."

That natural abilities, unaided by the advantages which you have had, with close observation and long experience in a series of years, has produced some of the ablest men, both in the medical and dental profession, I will not deny, and they have also furnished science with some of its brightest ornaments. But I do not believe in the efficiency of those "natural dentists," "natural bone setters" and "natural doctors," in the beginning of their *unnatural* operations. That knowledge which will generally lead to success, must be grounded in an intimate acquaintance with the anatomical, physiological and mechanical structure of the organs upon which we are to operate. The rapid advance which has been made in medical and surgical science has depended upon this knowledge, and great have been its achievements and glorious its triumphs. It is that knowledge which enables the skilful surgeon to restore the distorted limb to its fair proportions; to banish, with a touch from his practiced hand, obliquity of sight, and place the organ of light, of beauty and of vision in its right position. And it was that knowledge which enabled our distinguished cotemporary, Dr. Hullihen, to reduce a face marred by hideous deformity, to comparative beauty, symmetry and comeliness. And it is that knowledge that will enable you, even in the beginning of your practice, to avoid the injuries inflicted by ignorance and presumption, and confer the benefits which the combined knowledge and experience of your predecessors have found most successful, and which has gained for them the gratitude

of thousands, and placed the profession on the high ground it occupies in this country over any other.

A distinguished Parisian, a gentleman and scholar, Count de D., now in New York, remarked to me a few days ago, that he had "discovered, during his residence in this country, that there are here two clases of dentists—one very high, and the other very low; and that the latter lives upon the reputation of the former." This latter class consists chiefly, at the present time, of amalgamists. There may be honest and truthful men among them, but if there are, they differ very much from those champions of amalgam whom I have encountered; for I have already proved some of them to be without either professional or moral honesty, and can do the same in regard to others, if necessity shall require it. I am willing, however, that this necessity shall never call me to this unpleasant task; but I will never shrink from the task, unpleasant as it is, when the conduct of knaves and charlatans shall render that task a duty. To the American public I owe many obligations for the confidence my fellow-citizens have reposed in my professional practice, and I intend to discharge, at least, a part of these obligations, by exposing the tricks of mountebanks and the impudence of knaves. Of all the quackeries of our profession, or of those who live only to disgrace it, I regard mercurial paste as the most notorious, execrable and base, as it has been used in this country; and should a part of my life be spent in exposing the evils of such nostrums, I shall not regard it as utterly lost to my race, or to my country.

In our intercourse with the world, we meet with two distinct classes of men. On the one hand, are those who earn their livelihood by industry and labor; and on the other hand, are those who live by the industry and labor of others. So, in the former of these classes, there is a distinction not less strongly marked in those who exercise callings which are useful to mankind, and those whose avocations are either unimportant or detrimental to society.

Without entering upon any details upon this subject, which might be deemed partial, it is not improper that on an occasion

like the present, we should congratulate ourselves on belonging to a profession which is not only eminently useful, but highly important to the interests and well-being of mankind; although we are, in some degree, forced to admit, that in many instances, its actual importance results especially from the follies and vices that exist in the excesses of what is called an advanced and refined state of civilization, over which morality and purity have neither secured nor diffused the blessings of health and virtue. But whatever be the cause of these evils, it is, nevertheless, one unfailing cause of the gratification which our professional labors bring with them, that they mitigate the actual suffering and augment the positive pleasures of human life. This, as we have said, is by no means true of many of the ordinary avocations, in the exercise of which numbers of our citizens acquire fame and fortune. That we labor, then, in a useful calling, in the service of our fellow-men, which is the truest service assigned us by heaven, should be a never-failing source of individual satisfaction and social congratulation in our profession. If it were not an eminently useful profession, the duties of which, when properly performed, are works of charity and benevolence, I am persuaded, there are many individuals who now labor in its ranks, who would abandon it forever; and this is, probably, the true reason why dental practitioners, as well as practitioners in other branches of the healing art, continue the labors of their profession longer than their personal convenience, or the inducement of pecuniary emolument would otherwise impel; and yet it is not to be doubted that both personal satisfaction, and the recompense of reward are entirely proper elements to enter into every man's attachment to his profession. Men live together, and our social relations are mainly based upon mutual usefulness, protection and support—and mutual usefulness, implying reciprocal offices of kindness, is but another name for mutual compensation.

Thus, a professional man has daily the opportunity of showing whether he has respect to the highest attainable or commanded virtue, that of loving his neighbor as himself; and by a faithful and honest discharge of his duties, he has also the daily

and hourly opportunity of fulfilling the divine precept, of doing unto others as he would that they should do unto him.

We have indulged in the foregoing remarks, merely to keep before the mind the all-important fact, especially in the opinion of every honest man, that whilst we secure to ourselves a livelihood by the daily labors of our calling, we do it without violating our sense of justice or our morality, by exercising a profession which merely tends to the corruption of society, or, at least, supplies only its imaginary or unreasonable wants. This fact, alone, is quite sufficient to place us at ease with our profession, provided it compensates our efforts with a suitable remuneration and support; and we, on our part, return to society a just equivalent in faithful and skilful operations.

These reflections apply not more aptly to any members of the dental profession as such, than they do to many of the graduates and students of this college, an institution which, in realising our fondest expectations, has greatly gratified our professional self-respect. It is gratifying to us that the cause in which this institution is engaged, is unequivocally and undeniably the cause of humanity; and that all the knowledge and skill which have been here gained and have issued from it, are among the works of philanthropy and good will, being no other than fraternal acts embodied and imparted in the love of truth—in the desire to advance the interests of the profession, by the brotherhood of kindred minds and kindred sciences.

With firm footing, therefore, upon this good ground, we have only to go forward, step by step, with the onward march of the age, and place our favorite institution and all its abettors among the foremost benefactions of our race—as certainly as we do this, we shall secure to our country perpetual improvement in professional science and dexterity. Of this term, "dexterity," I would emphatically say a few words to the students now before me. It is a word I wish you particularly to understand, in our vocabulary, signifies skilfulness of the right hand; it is a term, therefore, peculiarly expressive of one of the indispensable characteristics of a good dentist. Without science, it is very easy for a practical dentist to do much harm; and without manual skill and dexterity, it is impossible for him

to do much good. This is a point I have always urged upon the consideration of the profession—and the longer I am in practice, the greater need do I see of enforcing and insisting upon its claims, from the awkward and unfinished manner in which some of our prominent men, claiming to be "medically educated," advocates of cement, gutta percha and amalgam, leave their operations. Nor does this circumstance any more degrade our science, as considered by some, into a mere manual art, than the fact, that a good musician must have the required skill in fingering the keys or strings of his instrument, as well as a thorough knowledge of the science of music, in order to become, or to be rated, a good performer or perfect musician. Both "theory" and "practice," therefore, are indispensable (and, perhaps, equally so) to the success and reputation of our profession—and those are both taught with equal ability and care in this collegiate institution—a fact which has never yet been equally true of any course or system of private tuition, for which the studies and manual exercises of this seminary are intended as a substitute.

As the hardest and most valuable productions of nature and art are slow of growth and perfectibility, but of great longevity and duration, so must we expect it to be with this institution. Should it survive its infancy and pass from the hands of its present teachers and professors to the care of others and posterity, it will remain as it now is, the first as well as the oldest institution of the kind in the habitable world, as none have been known to precede it since the dawn of human history—and but one other, as far as I am acquainted, now exists, which has been established on the same basis for the benefit of the great West, by the energy and enterprise of our brethren and friends in Cincinnati, and which we hope will do much that will be of incalculable benefit to those who are desirous in that section of our country, of qualifying themselves for general practice and usefulness in the dental art.

This college is acknowledged by, and holds a representation in the largest and most respectable body of professional men that this or any other country ever assembled together, and the cordiality and kindness with which the delegation of this in-

stitution was received as such, is, and should be, a cause of pride to ourselves, as well as of grateful acknowledgment to the high-minded and generous philanthropy of those who gave that reception. The voice of admiration and approval of its great advantages and happy influences reach us continually from other nations beyond the seas. Prospects like these cannot fail to encourage us to unwearied effort, and from the success which has already attended practitioners, both in the new and old world, capable of giving dignity to any human calling, with colleges, societies, essays, periodicals and journals, and finally, Dentalogia, to celebrate the triumphs of their skill to generations yet unborn. Such is the condition of the profession, young gentlemen, to which you have attached yourselves, and among whose members now become fairly and honorably enrolled, and may you do justice to yourselves, to the institution from which you now go, and to your teachers, as a return for that good which you so generously and frankly acknowledge they have done to you. Knowing the great advantages you have here received, it is a duty which you owe to the institution to increase the number of its graduates by earnest recommendation, by which you will add honor and dignity to the profession, and confer a lasting benefit on mankind. This is no more than gratitude and philanthropy demand at your hands, and no less than a common sense of justice will impel you to perform.

Since we last met, two members of the dental profession well known in this country, have been removed by death—and it becomes us on occasions like the present, kindly and respectfully to remember those who have given character to the profession, either by their moral or professional standing—by their influence in social relations on society—or who, by their talents or writings, have contributed in any way to our stock of professional knowledge. We should all aim to leave something behind us worthy of being remembered, and worthy of being told to our successors.

Leonard Kœcker was born the son of a Lutheran clergyman, in the year 1785, in Bremen, in the kingdom of Hanover. In early life, he received the rudiments of a good plain education,

but nothing more. At the age of fifteen he was engaged in a mercantile house in his native place, and during his stay there, he became acquainted with a peddling Jew dentist, who took much notice of him, and allowed him to become familiar with his instruments—and who also gave him a small set of implements which are now in the possession of his son, a young gentleman of fair professional promise, who has chosen his father's calling, and is settled in Philadelphia. It is to him that I am indebted for these facts, communicated to me in a conversation a few days ago. His father's childhood was marked, as stated by a lady who knew him as a child, by great gentleness of manner and was even then uniformly polite and kind; all which characteristics continued through life, and to that suavity of manner much of his success may be attributed. He came to this country as a commercial agent, and landed first in this city. The agency soon failed, and he was left with very limited resources, but being an accomplished musician, and mixing much in society he made many friends. On visiting Philadelphia he made his circumstances known to Mr. Delaplaine, representing to him the knowledge he had obtained from his friend the Jew, and was advised by that gentleman, immediately to commence practice with the knowledge he then possessed, and to add to it as opportunity might offer. He accordingly took a room in Sansom street, and his first visiter was a gentleman who called to have a tooth extracted. He grasped the tooth with an instrument, shut his eyes and turning his head from the patient, made a strong effort, which dislodged the tooth from the socket, but under such excitement that he knew not whether the tooth was out or the jaw broken. The gentleman complimented him by saying he had never before had a tooth extracted so easily, and from that gentleman's influence his success commenced in Philadelphia. At that time there were no dentist instrument makers that he could employ, and he made his own instruments as necessity suggested the want of them, which practice he afterwards continued as far as supplying patterns. At that time gold foil was but imperfectly prepared, which he used to anneal himself. His business continued to

increase in Philadelphia until it reached $8,000 a year, but from dyspepsia his health failed, and he was obliged to give it up, and went to Europe in 1822. Although he took with him the best professional recommendations, and socially the best introductions, he had many difficulties to contend with in establishing himself in London—but by unremitting attention and by gaining the favor of distinguished professional men, he finally succeeded in obtaining a steady practice, worth as much yearly as it was in Philadelphia. By application and study, he became a good Latin, French and English scholar, and received diplomas from the medical colleges of Philadelphia and London. After a residence of five years in London, he produced his "Principles and Practice of Dental Surgery," which was severely handled by the London critics, notwithstanding it was the best and most complete system of dental practice that had been given to the profession.

About this time he effected a perfect cure of a diseased palate, and supplied, successfully, its loss, for a gentleman who had been recommended to him by Mr. Laurence and sir Astley Cooper, the great English surgeons, which circumstance secured to him the confidence, friendship and respect of those gentlemen. He had an ardent love for his profession, and after practicing about seven years in Philadelphia and twenty-eight in London, he retired, selling the good will of his practice for twenty-five hundred pounds, about twelve thousand dollars. He was a man of refined taste, a lover of the fine arts, and especially of music, but of very extravagant and expensive habits. Speculative in his business transactions, he, at one time, lost nearly fifty thousand dollars, the best part of his savings, by unfortunate investments in rail road stock. About nine months before he died he met with a serious accident, from his night gown taking fire, by which he was dreadfully burned, and from which he never recovered. He continued to fail from this injury until dropsy and asthma supervened, which terminated his life at the age of sixty-five. He was buried on the 8th of August in Norwood Cemetery, about six miles from London.

Of the parentage and childhood of Dr. Lewis Roper, I have

not been able to collect any important facts, farther than that he was born in Philadelphia; he was the son of a sea captain, who was lost at sea when he was a child. At eight or nine years of age, he was placed with Mr. John Sillers, of Upper Derby, a farmer, with whom he lived until he was apprenticed to Mr. Ferris Price, a house carpenter in Philadelphia, where he stayed until he was twenty-one, at which time he commenced business for himself. Before, however, he had finished his apprenticeship, he married the daughter of Mr. Jonathan Shoemaker, which marriage was in one year terminated by the death of his wife. Being now without the responsibility of a family, and free to follow the bent of his inclinations, he left Philadelphia and studied his profession in New York, with a dentist then residing there, by the name of Chevalier. After obtaining all the knowledge he could from him, he went south and practiced some four or five years, returning to Philadelphia in the year 1829 or 1830. He soon gained a position and acquired a considerable reputation as a dentist, and at the death of Dr. Hudson, in 1833, he took the dwelling previously occupied by that worthy man and highly distinguished dentist. In the mean time he received the diploma of the University of Pennsylvania, the first and oldest medical college in Philadelphia.

Dr. Roper told me, some years ago, that his first success in practice was accidental, and arose from his acquaintance with a family with whom he was fellow passenger on his first leaving his preceptor in New York. Learning that he was a dentist, they requested him to go to the place where they resided, Charlottesville, Virginia, and being a family of influence, their recommendation at once gave him a fair beginning in professional life, and he gained strength as he went from place to place. As it has been already said, he returned to Philadelphia, and with the avails of his professional success he was enabled to procure a good house, which he furnished very handsomely, showing much taste in its internal arrangement; he shortly afterwards married, in 1831, Miss Glover, the daughter of captain William Glover, of Philadelphia, a young lady who had been carefully educated, of refined intellect and of great

personal worth and domestic virtues, a marriage of the utmost cordiality and connubial happiness.

After a few years of great prosperity, Dr. Roper, in 1840, was called to mourn the death of this excellent woman, which occurred almost without warning, from the rupture of some important artery or blood vessel, leaving one only daughter.

Dr. Roper had by this time obtained a large practice and saved a handsome sum of money, but was encouraged to place it in the hands of some of his friends, who were dealers in stocks, for which they made him large purchases. At one time, the stocks increased upon his hands which added greatly to the sum already invested. This encouraged him to go on until a large portion of his hard earnings were by these stock operations completely swept away. Dr. Roper, in 1842, married a third time, a lady of this city, a daughter of Thomas Hillen, Esq. one of the most respectable citizens of Baltimore, a lady of great personal worth and attraction.

He purchased a splendid house in Philadelphia, furnished it with great taste and elegance, and lived in a style corresponding with the establishment. Dr. Roper had a great love for paintings and works of art. His collection would compare well with the collections of other gentlemen of acknowledged taste and liberality in that way. He had the largest collection of valuable and rare coins and medals, that I have ever seen in any private cabinet, and I should think, that his collection of autographs would compare with the largest in the country, all of which were arranged with great care and labor. In the midst of all these quiet and social comforts and advantages, the California excitement broke out, and with his enthusiastic spirit and ardent temperament, he entered largely into the purchasing of property, consisting of houses and household conveniences, for that market. After shipping his merchandise in Philadelphia, he took passage at New York in September, 1849, in one of our fine steamers, full of hope and expectation, to be realized in the newly discovered world of gold. On his arrival there he made purchases of ground, sold some of his houses and erected others, and at one time seemed to have made a large fortune,

but a change came over the city of San Francisco, by fires and other causes, and a vessel containing seven houses of his not arriving, Dr. Roper lost the whole of his large investments, and with broken hopes and humbled ambition, took passage on the steamer Panama, for his native land, and died of cholera on the very day the steamer arrived at Panama.

A fellow passenger, lieutenant Hoskins, who attended him most faithfully, says, that after the cholera broke out, Dr. Roper was continually with the sick and dying, and that he really fell a victim to his devotion to their necessities.

On the morning he was taken, 21st August, 1850, he had been administering to their wants, and being much exhausted, he went to the upper deck about ten o'clock, and laid down to rest upon a settee, where he was immediately seized, and so sudden and so violent was the attack, that he soon became insensible, and at seven o'clock the same afternoon died. As soon as preparations could be made, the passengers assembled on the side of the vessel's deck, and performed the last sad duty to the lifeless body, by lowering it gently into the water with no less coffin and winding sheet than the boundless billow, and no less grave than the vast and almost shoreless Pacific, whose rolling waves murmured the mournful requiem as the remains of Lewis Roper sunk to their final resting place.

Dr. Roper was known through life as being a highly honorable, sensible, quiet and amiable man; he took great interest in whatever tended to advance the science of dental surgery, and his exemplary and moral life gave character to his professional standing. He was one of the original formers of the American Society of Dental Surgeons, and one of its first vice-presidents; he took great pains to be present at its meetings, where he was much respected; he was a member of the first examining committee, at which I was present, appointed by this college; his professional views and opinions were always treated with deference and respect, being always marked with thought, discrimination and judgment.

The biographies of these two individuals, and their incidents of life, will furnish you, my young friends, with valuable les-

sons which I hope will make a deep impression upon your minds—for in these two biographies, there is much to adopt and much to avoid. The industry, application, perseverance and gentlemanlike deportment of the departed will be examples for you to follow, and it is not certain that any one of you will surpass, if you ever attain in that respect the standard of either of them. In their business character the greatest fault, perhaps, of both, was a speculative disposition, which gave them a desire to accumulate faster than the steady avails of professional labor or lawful interest on stocks and loans would enable them to do.

You would be safer in placing yourselves with careless operators, having dull heads, rough hands and sharp instruments, than to risk your money with reckless speculators, having oily speech, smooth hands and keen heads. The first can only expose you to a simple *break* or *cut*, which your knowledge and skill can soon cure or restore, but the other will *break* up your comforts and *cut* you out of all you possess, which no art or skill of yours can ever regain. I inquired of a gentleman who had made a large sum of money by steady business in a northern town, and who lost it in Wall street, how long a man of fortune, unacquainted with the business of that street, could sustain himself there? he replied with much emphasis, "if he is a very shrewd fellow he may possibly hold out two weeks—it took but a little longer than that to ruin me." Know, then, my young friends, that stock and all other speculative operations, are the very last things that dentists should meddle with, for like those whose experience is now before us, whose names we thus respectfully and kindly remember, you, too, will be likely, from such operations, to *extract* nothing but sorrow and disappointment, your coffers will be thoroughly *clean* of all *adventitious* and *local* deposits. Your accumulations from principal and interest, will be widely *separated* and effectually *stopped*. Your *plate*, whether in *single* or *double sets*, will no longer be *adapted* to your own use, but with a *painless grasp* fall into other hands; your very *substance* will be *wasted* and your credit *shattered*. Losing, thus, your professional *caste*, you will utterly fail to *regulate* the *derangement* of your affairs, occasioned from

various *processes* having *absorbed* your interests by *local* or *established agents*, thus *breaking* up the *elastic springs* of youthful ardor and ambition; old age will come upon you, making the *double impression* of regret and disappointment at finding your pockets *poorly filled* with *base metal*, when they should be full, even *rounded* to their *edges* with *pure* and *polished gold*.

You are now about to take leave of a place that will, in after life, be hallowed with many pleasing thoughts, recollections and associations. The anxieties you have felt, the difficulties you have overcome, the friendships you have formed, the pleasures you have enjoyed—the very city itself, with its hills and valleys, its monuments and squares, will be subjects upon which your memory will dwell with unmixed pleasure.

Baltimore, so full of interest, kindly feeling and hospitality, is not an unmeaning picture with which to compare your professional life, for in its local patrons and advantages it is not unlike what your intercourse will be with mankind. Your experience will be to you, as ours has been to us—uneven, irregular, broken and diversified. Your professional practice will make you acquainted and familiar with high situations, generous aims, noble efforts, elevated walks, refined elegance, polished exteriors, great liberality—Amidst these bright traits of character, which apply with no less truth to the city than to the people, you will sometimes meet, and I hope but rarely, with *neglected ruins*, *round turns*, *sharp points*, *narrow ways*, *low grades*, *fancy railings*, *deep* and *cross cuts*. But, however many of these you may encounter, you have only to maintain steadily your position, keeping the pillar of fame constantly in view, which will be to you what the proud monument to Washington is to the citizens of Baltimore; and even amidst difficulties, elevate your thoughts to the summit of professional excellence. And there let them rest with the same feeling of pride that they indulge in gazing on the noble work, and resting their eyes upon the majestic form, on its summit, representing to them the perfection of human character, unsullied by the storm and unhurt by the tempest. It should, as it no doubt will be, a source of pride to you to say that you studied your

profession in Baltimore. Baltimore, therefore, has a claim upon you—she demands that, bearing upon your credentials her proud name, you consider her glory identical with your own. Never, never can I forget the feeling of pleasure that thrilled through my whole frame, when from that monument's lofty height I first looked upon this beautiful city, and leaning against that noble structure on its top, I could not resist the desire to express, though feebly and faintly, the feeling that animated my thoughts, and should the reading of the expression of them excite no other emotion in your minds, it will at least be associated there with the day and with the occasion when you received your first professional honor, and with that association, I desire to be kindly cherished in your memories.

Washington! immortal name,
  On thy monument I stand,
Noble tribute to thy fame,
  Founded by a grateful land!
Yet—that land itself shall be
Noblest monument to thee!

Land by matchless valor bought,
  Home of nations—happy—free;
All her children shall be taught
  To respect and honor thee;—
Be her banner wide unfurled
Bearing freedom to the world!

Far from this majestic scene,
  Bursting fair upon my sight,
Where the northern mountains green,
  Glitter in the morning light;
Fast beside a murmuring stream,
Came to me life's infant dream.

Still, 'tis all my native land,
  Wheresoe'er I chance to be;
And I grasp with friendly hand,
  All who love its liberty.

Liberty by heroes won,
Led by thee, our Washington.

Who upon this marble tower,
Reared the patriot's noble form;
Fraught with mercy's gentle power,
'Mid the raging battle storm?
Your's the praise from shore to shore
Noble sons of Baltimore.

SELECTED ARTICLES.

ARTICLE X.

On Filling Teeth. By JAMES TAYLOR, M. D.,

[Continued from April No.]

THE fourth order of cavities in my classification are the palatal, and occurs less frequently than either of the three already described. They will more frequently be found on the anterior and posterior molars above, and on such of these teeth as have well and deep marked sutures, running across from their labial to palatal face; or, as is sometimes the case, the suture dividing only the palatal face, and then losing itself in the posterior depression on the grinding surface of these teeth. On the palatal face, however, of the lateral incisors, a depression is often met with, and then we may expect a decay presenting cavities of this order. The front incisors and canine occasionally present this condition of decay. The bicuspids scarce ever. In the teeth of the inferior maxillary they are scarce ever found. I do not now recollect of ever having met with over a dozen cavities of this classification in these teeth.

We have at times a recession of the gums from the necks of the teeth and when this is accompanied by a vitiated condition

of the secretions of the mouth, we will sometimes find cavities of this order, running across the palatal neck of the teeth. This condition of decay, and that induced by clasps for artificial teeth present the most difficult of this kind to fill. These cavities, so long as they are confined to the crown of the teeth, and do not dip under the edge of the gum, are more easily managed than any other except the central, and as the operation in these is much the same it will require but little explanation. When small and situated on the line of the sutures or the depression in the incisors and canine as alluded to, they are readily prepared for the filling by the use of the burr drills and excavators. When in the sutures, however, they will often run along these, forming a long narrow cavity not very manageable with the drill. These cavities, when of considerable depth, should be of the same size at the opening of the cavity as within, and in introducing the gold, the first block or fold of gold should be placed in that part of the cavity nearest the gum. After the gold has been thoroughly compacted and made flush with the border of the cavity, the filling may be filed level with the enamel and depressed on a line with the suture, carrying out to some extent, at least, the natural form of the teeth.

The palatal cavities found on the neck of the teeth present more difficulties in the operation of filling. The posterior and anterior part of these cavities will generally be found very shallow, and the more they circle the necks of the teeth the more difficulty will be experienced in the operation; sometimes requiring very much the same treatment as that described for the labial cavities on the posterior molars in the inferior maxillary. It will not do in this condition of decay to make the floor of the cavity level; for if this be the case, and the decay is on a bicuspid, or passes over the inner root of a molar, the nerve may easily be exposed. A proper knowledge of the location of the nerve will always guide us in the formation of these cavities, and indeed in all deep cavities must to a certain extent control the operation.

One difficulty almost always met with deserves a passing notice. It is, however, more a condition of things than really

a part of the operation, yet such a condition as very much to increase the difficulty of forming the cavity and filling the teeth. I allude to the extreme tenderness of tooth bone most usually met with in this condition of decay, and this is especially the case when it is the result of injury from clasps. It is evident that friction cannot alone be the cause of this difficulty. I have sometimes thought it had but little to do in the matter. We have here two characteristics of decay; one, in which the cartilaginous portion of the tooth appears to have been removed, leaving the dentine whiter than natural, and which crumbles readily under the instrument. The other is the loss of the earthy portion, leaving the cartilaginous portion soft and spongy. If now galvanic action is at work, and incites to decay or decomposition of the original elements of the tooth, why, in one month produce one state of things and in another the reverse? May not the galvanic action be changed by the condition of the fluids of the mouth? We know that one acid acts upon the lime of the tooth, and another on the cartilage, and I believe it is an admitted fact that in galvanic action heat is generated, and acids we know when heated act more powerfully than when cool. The investigation of this subject is certainly worthy the attention of the profession; and for this reason, that a dentifrice or wash which would be a proper and an efficient neutralizer of one acid is not for another; in one case it may be of decided benefit, and in the other of no use at all. Washes and dentifrices should never be prescribed for the gums and teeth without a careful investigation of the nature of the disease with which the gums or teeth may be affected. This tenderness of the teeth of which I have been speaking is often annoying to the operator and occasions much pain to the patient, and when met with I generally depend on the excavators for the preparation of the cavity. If there is no danger of exposing the nerve, I gradually work a very sharp excavator through the decay to the healthy bone, and with a firm and steady hand pass the instrument around under the carious portion. After this, I have but little further trouble in removing the decay and forming the cavity. I should want the class of cavities now under

consideration slightly enlarged within, merely enough so, that the gold first introduced (commencing at the posterior part of the cavity) may not be displaced by the last fold or blocks introduced. It should be remembered that often the outer circle of these cavities is much or at least some longer than the inner, and the pressure made to introduce the last portion of the plug would be rather calculated to displace the first. The form of cavity, rather dove-tail, will, when the first blocks which have been introduced and in a measure compressed and made solid, prevent any displacement of the gold. In this condition of cavity I use almost entirely my gold rolled into blocks, made sufficiently large, so that each block as introduced shall fill up the cavity in its breadth, so that at the insertion of each block it is forced back and down to its proper place, and thus consolidated as I advance in the filling. The anterior and posterior wall of these cavities should be sufficiently deep, even if cut into the healthy bone as to afford a hold for the first and last blocks inserted. After proper compression and consolidation of the plug it should be filed smooth and rounded to the shape of the tooth, when it is ready for polishing.

The compound cavities are generally of the following kind: first, the approximal and central uniting; second, the central and labial, and sometimes the approximal and palatal. Those occurring most frequently are the approximal and central, and these in the molars and bicuspids, superior and inferior. We have here a form of cavity requiring great care and skill to properly fill—that portion of the bone and enamel which separates the two cavities and which forms the upper border of the approximal has been broken away, destroying, as a matter of course, the wall which forms a part of either cavity and which is so essential for the proper retention of the plug. We have in connection with this, an extensive decay—both cavities may indeed have been large before their union. As an illustration of these cavities and the manner of filling, we will take the anterior molar of the inferior maxillary, decayed on the posterior approximal surface, and also in the centre. The approximal cavity is large and has extended itself to the central. The first

thing here to be done is the separation of the molars, and if the decay is as extensive as is generally found, the posterior approximal surface of the decayed molar should be cut and filed away, so that the posterior prominences shall be beveled off, forming a beveled but somewhat rounded surface from a line of union of these two cavities down to the neck of the tooth. This condition of things will at all times be somewhat controled by the depth and condition of decay.

In the formation of the cavity, care should be taken that the border circling with the gum should be well formed, and at least not diminish the size of the cavity within. But the greatest care is requisite in the formation of these cavities, at that point where the two have united. The cavity is generally most shallow at this part, and unless it fully maintains its size as it passes in, the plug will not be retained; but if the cavity at this point slightly enlarges within, no difficulty need be expected in the securing of a good and durable plug. The central portion of these cavities I form much as I should a central cavity, only changing when it unites with the approximal to suit the altered condition of the parts made necessary by the union of the two.

In the introduction of the gold I commence in the approximal part of the cavity, but I should first remark that I adjust my napkin and speculum just as if I was about to plug a central cavity. In the preparation of my gold, I take care that the first block is of sufficient size to extend from the labial to the palatal wall of the cavity, and compress this to its place, being careful to fill up that portion of the cavity nearest the gum first, so that the remaining blocks shall wedge in on top of this until the cavity is completely filled to a level with the floor or bottom of the central part. I then have a few blocks long enough to extend into this, and thus fill in part the central portion in this way, leaving sufficient depth of cavity, however, to receive a central plug, which is inserted with blocks and folds of gold in the usual manner, finishing, however, at that part where the approximal and central unite, by securely wedging in a few folds of gold under the beveled wall which is here

made for this purpose. The compressing instruments are now applied until the gold is completely consolidated, and the gold filed level with the margin of the cavity, using such instruments as are necessary for both the approximal and central fillings.

The plugging forceps first used in this operation are so bent that the point turns back towards the handle of the instrument, and the points of the forcep blades flattened just the reverse of those used in the central cavities; these latter are bent for the lower molars at near right angles.

We have here an approximal cavity, the upper margin of which has been destroyed, yet the plug secured in part by the central filling. All the cavities of this class found in the molars and bicuspids can generally be treated in the manner described.

The central and labial sometimes unite and are found most frequently in the molar teeth. If the central is large and deep and the labial small, and situated about midway on the crown of the tooth, the bottom of the central cavity will be below the lower wall of the labial cavity, and the union is complete up to the grinding surface of the tooth. The foil here should be introduced first into the central cavity, and this should be done, compressing one or more blocks laid in on their sides, until the cavity is filled up to a level with the labial decay. Then introduce blocks on end in the posterior part of the central cavity, until it is filled up to a line with the labial; then fill up the labial, letting the blocks extend through the central cavity. When this is done, finish the anterior portion of the central plug; before compressing, force into the center of the central plug, which is formed by the blocks which make the labial plug, a sharp pointed plugger—make an opening as large as possible by forcing the gold against the anterior, posterior and palatal walls; then fill this with one or more small blocks, or a few folds of gold, compress the plug and file the labial filling level with the rounded face of the tooth, and trim the central as in other cases. Should the labial cavity be large and the central small, fill first the labial, and when filled up to the floor of the central, use blocks of gold which will pass into this and

rest against its palatal wall, and when the labial cavity has been well filled, should the central be incomplete, open in the center, as before, and fill solid.

In the molar teeth a central and palatal cavity may unite, when the same treatment can be adopted with the same beneficial results; or, if a portion of the palatal wall of a central cavity should give way, the same treatment is admissible, and affords, as I think, the best possible chance for a perfect filling. One of my inferior posterior molars, a few years since, gave way in this manner, and after one or two ineffectual efforts to have it filled in the ordinary way, my brother, Dr. E. Taylor, plugged it in the manner which I have described, and nothing could be more satisfactory. The ends of the blocks, in part, form the palatal face of the tooth, and were filed and trimmed to suit its shape.

One other condition of compound cavity is worthy of especial notice. This is palatal and approximal uniting in the lateral incisors. The palatal cavity is here generally near the gum, and is preceded by a natural indentation in the palatal face of the tooth—a burr head drill is generally used for the preparation of these cavities for the plug, and when the approximal unite with this, it is generally near the neck of the tooth, or at what might be called the base of the approximal cavity. I first prepare my palatal cavity, then adapt the approximal to suit, not enlarging, any more than possible, the opening which unites them. I then fill the palatal; then commence the approximal plug at the base of the cavity: next the palatal filling, and finish at the point under the cutting edge of the tooth. When the fillings are compressed, trim and file to suit the natural form of the tooth.

Other specific cavities might be alluded to, yet I have already occupied, perhaps, too much time and space on this subject. True, there is none other so important to the profession, and none having so few specific directions, by which the young operator may be guided in the performance of this difficult operation. Much might be said in relation to the position of the patient's head, and also to the position of the operator

which I have not alluded to. Perhaps no two operators will always take the same position in the use of even the same instrument. That which is most important I have tried to make as plain and practicable as possible.

I have reserved, till now, the finishing part of the operation, which is the polishing of the plug. This has been done because about the same process is needed in all cases. The surface of the small and large fillings should alike present a fine and polished appearance. This is not only requisite for the general appearance of the plugs, but also that they may be smooth to the tongue and not be injuriously acted upon by use of tooth-pick, brush, &c.

For the finishing of many small plugs, the burnisher is almost all that is necessary, using, when necessary, the Arkansas stone or the Scotch stone to grind off any scratches that may have been left by the file and scraping instruments and which do not yield readily to the burnishing instrument.

The file I regard as an indispensable instrument in the preparation of a plug for burnishing. These I have alluded to already, and they should be used to file off all the protruding gold and give the plug that external form which may be desirable, and unless they leave the surface of the filling to some extent smooth, I should regard the gold but as poorly introduced.

There should be no ragged projecting pieces of gold around the border of the filling; to avoid this, a small and somewhat blunt pointed instrument should be passed entirely around the outer border of the filling; compression made all round and the rough edges of the plug trimmed away from the margin of the cavity.

The last file used on the surface of a filling should be of the finest quality of gold files, and if they have been somewhat worn, all the better.

The smoother the plug is left by the file, the less labor will it require to finish the operation. After the file has been used and the plug trimmed so that the antagonizing tooth does not strike first on the gold, I take a suitable burnisher and make

hard compression over the entire surface of the plug; then apply the Scotch stone, (such as jewelers use,) and grind out all the scratches left on the gold. The Arkansas stone I have found to clog up, and it is not expeditious enough. When the plug is inaccessible to the use of these stones which are made of different shapes to suit almost all conditions, I take that which has been pulverized, and use this with a stick of wood, or oftener with a rounded or flattened burnisher; when this operation has been carried to sufficient extent, wipe off the plug, and with a little rouge or castile soap and burnisher, finish. In large fillings, I have found it advantageous and this part of the operation much expedited by using rougher stones, those which cut faster, or for the approximal fillings, emery and glue on a tape which is passed rapidly between the teeth, and if the emery is fine it leaves a smooth surface, which is soon finished by the burnisher. Dr. Parmly's "argillaceous tooth polishers" I have often used, and find them to answer a good purpose in preparing the gold for a finer material. The plug should be left perfectly smooth, free of all scratches and indentations, and reflect, like a mirror, the instrument as it passes over it. All should try and attain this object; true, they may arrive at it in different ways, but I think all will admit, that the better the gold is introduced and consolidated, the easier will this be accomplished.

The subject of destroying the nerve and filling thereafter, also, capping and filling will be treated in a separate article. I am aware that there is much in the manner of preparing the gold, and its introduction which is new, at least not so far as I know, practiced by the profession. I had never seen a pair of plugging forceps or plyers until I had them made. It is not expected that those accustomed to fill teeth in a different manner will (if even they see proper to try the use of the forceps with the foil rolled into blocks) succeed to their satisfaction the first effort—practice makes perfect in this, as well as in almost every thing. "Try all, and adopt that which is best."

ARTICLE XI.

On Ozena. By M. Max-Simon.

M. Max-Simon, in relating a case of this disease, makes several interesting remarks. Sometimes, he observes, it arises from ulceration of the Schneiderean membrane; at others, a deformity of the organ, whether congenital or acquired, prevents the free discharge of the mucosities of the nose, while in some cases there are signs of simple chronic inflammation. Another class of cases, of which this is an example, arises from a morbid condition of the economy at large, inducing modification in the condition of the secretion: just as we meet with intolerable stinking secretion from the feet, in persons perfectly clean; a peculiar odor from the axilla, occurring in others besides the red haired, in whom it is normal: and an insupportable condition of the breath in certain menstruating women. In such cases as these, the most careful examination exhibits no marks of inflammation or ulceration. The ulceration, in fact, which is met with in syphilis or other diseases, is not the cause of this peculiar stench, which is different from the smell they produce. A delicate young lady, æt. 14, had been under M. Simon's care for several years, for well marked ozena. Repeated examinations exhibited nothing abnormal, the mucous membrane being pale and not thickened, and the mucus itself normal in appearance, though sometimes increased in quantity. All medical treatment, whether local or general, proved quite unavailing, so that at last all was abandoned, but extreme cleanliness, and attention to maintain the general health in as good a condition as possible. However, menstruation came on, under the influence of which her system became much stronger, and her health far better, and the fetid odor diminished, to entirely disappear sixteen or eighteen months after the menses had become established. Another proof of the constitutional character of the disease in this case, and of the inutility of local measures, is found in the fact that a blister having

been applied to the girl's arm, the serum furnished precisely the same smell. Her mother, too, suffered from the same infirmity, although by excessive cleanliness she kept it somewhat concealed. Her nose was a flat one, but that of her daughter was well formed.

These well-marked cases must not be confounded with a mere temporary unusual odor of the nasal mucus. In some persons this is liable to become accumulated or suppressed for a longer or shorter time. In the case of a young man, in whom there is no congestion of the mucus membrane, thickened mucosities are blown out from time to time, having a distinct spermatic smell. A young girl, at times, exhales mucus having the characteristic smell of ovena, and then, without the slightest care on her part, this disappears.

When the disease depends upon a mere perverted action of mucus membrane, the nitrate of silver injections are very useful; but when it is a constitutional affection, all local applications are mere palliatives. The greatest cleanliness is essential, and scented waters should be frequently injected into the nose. Sauvages found advantage in some cases, from the setting up a substitutive action by the use of snuff.—*Bulletin de Therapeut. Brit. & For. Med. Rev.*

ARTICLE XII.

An Essay upon Clasps for Retaining Partial Sets of Artificial Teeth in the Mouth. By CHARLES A. DUBOUCHET, M. D. Read before the Pennsylvania Association of Dental Surgeons, February 7th, 1851.

MR. PRESIDENT—In accordance with the rules of this society, it has been your pleasure to appoint me to prepare an Essay on some subject relating to our profession. That much good may be accomplished by following up this method, every member of this society must feel convinced.

The high tone of improvement pervading the dental community demands at our hands a continuance of efforts to keep in the onward track.

The "Dental News Letter" affords us such an excellent channel to diffuse throughout the land whatever information we may have to impart, that we should not neglect to improve the opportunity. The papers published in it upon "Filling Teeth," and "Mechanical Dentistry," as well as upon other subjects, contributed by our members, have shed upon the Pennsylvania Society of Dental Surgeons a lustre, in the bright effulgence of which any dentist may *well* feel proud to bask.

Under such circumstances, the task allotted me becomes important, and such precedents render me conscious of inability. Still, Mr. President, deeming it a duty and an honor, and relying upon the indulgence and proverbial kindness of our members, I shall proceed to make a few remarks.

Lately great improvements have been made in mechanical dentistry. First in the rank we notice atmospheric plates, used for the insertion of one or two teeth, in the place of the old-fashioned plates with clasps; and our fellow member, Dr. White, is among the first to have given his attention to this new mode of insertion.

This seems to be, indeed, an improvement, and the more we have investigated the matter, the more we have become convinced of its utility. Thousands of *healthy—sound—beautiful* teeth have been sacrificed, without remorse, by our professional predecessors, in their now obsolete practice of making their clasps as small as possible.

A case in point has just come under my notice; allow me to exhibit one of the victims to that erroneous custom of the dental dark ages. And would you believe it? the subject of this malpractice is not a venerable grandmother, she is an interesting young married lady; showing that the abominable practice of clasping cuspidati is yet rife in some parts of this continent. A few years have sufficed, in this case, to destroy, to all intents and purposes, one of the most important teeth in this patient's

mouth, besides causing her exquisite sufferings whenever partaking of sweet or acid aliments, cold or warm drinks.

This illustration, if known to any conscientious dentist, would I am sure, deter him from constructing similar contrivances.

The effect of narrow clasps is likewise injurious upon bicuspids and molars. We well remember a case, which occurred some two years since, in which four molars and two bicuspids were destroyed.

In order to conceal them from sight, the clasps were fastened upon the second molars, and made of small, half round wire, running along the first molar and second bicuspid on either side of the mouth.

The plate was very narrow, and the whole weight of the apparatus devolved upon the back teeth. In a short time violent inflammation of the gums supervened wherever the wire touched; palliatives were resorted to, and the patient not being very sensitive, persisted in wearing the teeth.

In a few years, one of the second molars having fairly been drawn from its socket, dropped in the mouth, still clasped by the wire, and caused the patient to apply for advice. Upon examination, we found the roots of the five remaining teeth exposed to the very apex, the lingual side of the alveolar entirely absorbed, and each tooth had a groove as nicely cut into it as might have been done with a saw.

In order that the two preceding illustrations be not supposed to be extreme cases, and of unfrequent occurrence, we beg leave to allude to another, in which the two canine teeth were destroyed although the plate was large. Eighteen months sufficed to expose freely to view the nerves of both cuspidati. Another set of teeth was now made, with two more teeth, and clasped, as previously, to the nearest teeth, the first bicuspid on either side, and the result was similar.

Both this, and the artificial piece alluded to in the preceding illustration, were executed in a workmanlike manner, and evinced great mechanical skill, which, however, could not atone for want of judgment, and the pernicious effects of the small clasps.

Some three years ago we were consulted by an eastern lady,

who a few years previous had a lateral incisor replaced by the present arrangement. Any respectable practitioner might be puzzled to tell in what manner such a contrivance could possibly be retained in the mouth. Still, it was tolerated there nearly three years, and particular attention was only called to it from extreme sensitiveness in the canine tooth adjoining.

Upon examination, we fouud this appendage wafting to the gentlest breeze caused by the breath of the fair patient; considerable *engorgement* of the gums above and around the adjoining cuspidatus, and a sort of ring beneath the loose edge of the gum, as often produced by tartar. Still we could not account, from the construction of the artificial tooth, how it was so tenaciously held in its clapper-like position.

However, the application of a scaler to the supposed ring of tartar, showed it to be metallic.

The dentist had cut the gordian knot. Unable to make the artificial tooth remain in the mouth, he had tied it fast to the next tooth by means of two turns of fine silver wire. The result was a complete exposure of the nerve, and consequently the loss of a valuable tooth, which it became our duty to replace.

These instances have multiplied to an infinite number, and are daily related to us by patients in all their details, losing nothing of their beauties by circulation, and thus:

"Mr. So-and-so is no better than he should be. He ruined that lady's teeth. He ought to be sued for damages. I would not have suffered him to treat me in such a manner."

There may or there may not be truth and justice in these complaints; the dentist may be ignorant, eager for gain, or unprincipled. But it also sometimes happens that the patient is the very cause of such mischief being inflicted, by beating down the dentist's price—wishing him to insert a set of teeth for less than actual cost of materials, if made in a professional manner.

In such a case, we can neither entertain sympathy for the sufferer, nor make any apology for the dental practitioner.

We are fully convinced that narrow clasps are injurious, and have not the least doubt that the larger number of the profession entertain the same opinion.

Of late years, respectable dentists have abandoned the practice of clasping with small, half round wire, and have made it a point to cut a clasp as broad as the tooth would permit. The size of plates has also increased; and under such modifications, we cannot say from actual experience, that teeth have been sacrificed, nor do we deem it likely. Still, it must be obvious that, in dispensing entirely with clasps, when the nature of the case admits of it, we eradicate even the shadow of a doubt, in the patient's mind, as to the propriety and safety of inserting and wearing artificial teeth.—*Dent. News Letter.*

ARTICLE XIII.

Extensive Injury to the Jaw, following the Removal of an Incisor Tooth by the Key Instrument—Remarks on the Extraction of Deciduous Teeth. By THOMAS UNDERWOOD, Esq. *Honorary Dentist of the St. George's and St. James' Dispensary.*

THE following case exemplifies the injury that may be done to the maxillæ by the two forcible extraction of the temporary teeth, particularly where there is a scrofulous tendency in the constitution.

The patient is a young lady, fourteen years of age, the appearance of whose face is very peculiar: the lower jaw is excessively pointed, presenting a sharp, wedge-like appearance, instead of the natural rounded form; and the following peculiarities are to be observed in the interior of the mouth: the four permanent incisors and left canine, in the lower jaw, are wanting, together with their alveoli; the right canine occupies the place of the right central incisor; and the bicuspids, or small molar teeth, branch off on each side. There are a small space of an eighth of an inch between the canine and left bicuspis, but the other teeth are in close contact. The jaw consequently

contains nine, instead of fourteen, the usual complement of teeth at this age.

The account which I received from my patient and her friends was, that six years ago one of the temporary incisor teeth was removed by the key—an instrument, the use of which was evidently unnecessary for a temporary tooth, more especially a temporary incisor. After the extraction, an abscess formed under the chin, about half an inch from the symphysis, which ultimately pointed outwards, and continued discharging pus for four years, exfoliated bone being now and then thrown off. Granulations then sprang up, and the wound healed. The result of the injury was, that five of the front teeth, with their alveoli, and a portion of the lower maxilla, an inch and a quarter in length, have disappeared.

A tumor having lately again formed, in much about the same position as the former abscess, the medical man in attendance on the case, though he believed it to be an enlargement of the sub-maxillary gland, was nevertheless anxious that a dentist should examine the mouth. I was accordingly consulted, but found the teeth all sound, and my opinion coincided with his, that it was an enlargement of the gland, which, owing to the angular state of the jaw, appeared to be protruded into the cavity of the mouth. The tumor has almost disappeared under the use of the compound iodine ointment. The patient is evidently scrofulous, which circumstance will, in a great measure, account for the extensive injury which has occurred; yet the operator was much to blame who used such an instrument as the key, so rarely admissible, even in adult cases, to extract a temporary *incisor* tooth. The result has been a disfigurement, which no art can rectify; but one or two lessons may be gathered from the case—viz. whenever we are called upon to remove deciduous teeth, the constitutional tendency of the little patient ought to be considered, and this is especially a matter of primary importance where any degree of force is to be used. Again, though parents, and even many practitioners, are in favor of extracting the temporary teeth, as soon as the permanent ones make their appearance, experience points to the contrary course;

and I have invariably seen, in my practice, that the longer the first teeth can be retained in the jaw the better, for irregularity arising from their removal being deferred, can always be rectified; and contraction resulting from too early extraction is beyond our power. Even in cases where children suffer from tooth-ache of the temporary teeth, I have always found a simple fomentation of water, as hot as it can be borne, applied for half an hour to the outside of the cheek, opposite the seat of pain, together with a gentle aperient, sufficient to afford entire relief; and by this means the teeth may be retained until their successors displace them, or at least until they may be removed with very little force.—*Lancet.*

ARTICLE XIV.

Necrosis of the Inferior Maxillary.

MR. STANLEY brought before the public of St. Bartholomew's Hospital, a patient who had lost the whole of his lower jaw by necrosis. The man, who looked about five or six and twenty, had been six months in the hospital, and traced the affection of the jaw to the effects of the vapors of phosphorus, to which his trade of lucifer-match maker had exposed him. The whole body of the lower maxilla, with one of the condyles, were exhibited, and presented several necrosed fragments, in which the original shape of the bone could easily be recognized. Mr. Stanley mentioned that the condyle, which was wanting to complete the necrosed jaw, had very probably been absorbed. The patient's appearance did not at first sight betoken such considerable osseous loss, and the usual contour of the face was tolerably preserved. This small amount of deformity was accounted for by the eminent surgeon under whose care he had been, by the thickening of the tissues in contact with the jaw, and an abundant fibrinous deposit which nature had thrown

out, in her endeavor to repair the loss of bone which the patient had suffered. New bone, however, is never thrown out in this form of necrosis. Mastication, in this instance, is carried on tolerably well; the food must be reduced into small fragments, which the patient prepares further by pressing them strongly against the roof of the mouth with his tongue. The function of nutrition seems to be going on tolerably well with this patient, for he looks in pretty good health. It may then, be inferred, that this imperfect preparation of the alimentary bolus proves sufficient for the digestive functions. The painful feelings excited by the sight of this new victim of our vaunted improvements in various branches of manufacture were greatly mitigated by the announcement Mr. Stanley subsequently made, regarding the prophylaxis of these dreadful affections. Workmen in lucifer-match manufactories have now a chance of escaping the baneful effects of the evolution of phosphorous acid, by placing saucers filled with oil of turpentine about their workrooms. As oil of turpentine is a solvent of phosphorus, it is expected that it will absorb the vapors which do so much mischief. This precaution is taken at a large lucifer-match manufactory in the neighborhood of the London Hospital, and the very best results are expected from it. This case, so very interesting and instructive in itself, was rendered peculiarly valuable in being brought forward by the distinguished author of the recently published treatise on "Diseases of the Bones;" and we were sorry that the time and place did not allow Mr. Stanley to enter fully into the different questions which such a case will naturally give rise to; for instance, as to whether the fumes act primarily on the periosteum, or whether the jaw is secondarily affected, as a consequence of the contamination of the system. This question, which is left unsettled in the work just alluded to, appears of some importance; for if it were made tolerably clear that the constitution is affected first, the poison might be counteracted by throwing appropriate chemical agents into the blood. Indeed, we should be much inclined, from the analogy offered by the effects of mercury, to think that the vapors act but secondarily on the jaw, though it would appear that the system

must be in a peculiar condition to become affected. The two cases mentioned in the last number of the Lancet, by Mr. Henry Taylor, of Nottingham, will prove very valuable to those who may investigate this subject in all its bearings; for here we have two men, who were employed for a considerable time at the manufactory before they experienced any ill effects; whilst in one the upper, and the other the lower jaw, suffered necrosis. These men were "dippers;" and it is but fair to suppose that the hand would have been the first to suffer, had the effect been direct. It must, however, be confessed, that the fact of the *upper* maxilla being affected, in Case 1, militates against the following passage, which we find at p. 75 of Mr. Stanley's excellent treatise: "Against the opinion that the phosphoric vapor acts merely as a local excitant, the objection has been urged, that it produces no effect on the periosteum of the bones of the nasal passages through which the vapor is directly inhaled." That these cases should not be classed among ordinary necrosis of bones is sufficiently obvious, the entire absence of the least attempt at the regeneration of bone being the most characteristic differential feature. Nor could this regeneration well take place, as, to use Mr. Stanley's words, (p. 75,) "there is here a total want of the essential conditions for the reproduction of bone—namely, inflammation in healthy structures, with health in the general system." The grey, pumice-stone-like, newly formed osseous substance, found by Dr. Heyfelder on the outer surface of the portions of bone which he extracted in similar cases, likewise points, as Mr. Stanley remarks, to an affection distinct from the usual death of bone. We sincerely hope that the etiology of these affections will fix the attention of the many able investigators in surgical science of which this country can boast.

ARTICLE XV.

Disease of the Antrum of Highmore. By R. D. Couch, Esq., M. R. C. S. L.

I observed, at page 32 of the new and improved series of your journal, a very interesting report from King's College Hospital, of disease of the antrum. From Mr. Fergusson's remarks, the disease appears to be a rare one, and for this reason I have forwarded the subjoined case of a similar disease.

Mary P., a healthy country woman, aged 52, received a blow about three years ago on the right cheek, about one inch and a half below the eye. She suffered a great deal of pain for some weeks; this became much better in about six weeks, but never entirely subsided. At the end of six months the face began to swell, and then she felt occasional fits of severe pain in the bones of the face and along the alveolar edge. This continued for two years the swelling was not very large. About twelve months since, the pain and swelling greatly increased. At this time, it appears that she was repeatedly leeched and blistered, and, as these failed to afford her much relief, various other local applications were used, but without much benefit. A short time before I saw her, a tooth had been extracted, without any good effect. On examination, it appeared that the disease was situated in the antrum, and that the pain and swelling were most probably caused by a confined fluid within the cavity. I could not discover that any discharge had taken place on the extraction of the tooth, though it was a decayed one. A small trochar was passed through the socket of the extracted tooth, and then forced through the bony plate which separated it from the maxillary sinus. A discharge of sero-purulent matter followed, which was very offensive to the smell. After this, she continued comparatively easy for some months; but the disease not subsiding in the manner I anticipated, another examination was made, and over the socket of the extracted molar,

there was a small abscess. On opening this, the bone was discovered to be diseased, through which there was a small opening. The gums were then divided from their attachments by a scalpel, and the whole of the diseased bone was then laid bare. The opening was enlarged with a bistoury, and afterwards with a bone forceps, and the cavity laid bare. There was some difficulty, though the mouth was a large one, in raising the lips sufficiently to get a clear view of the whole part. This, however, having been done, the cavity was exposed. The whole of the lining membrane appeared villous, and showed signs of long continued congestion and inflammation. The inferior portion was ulcerated, and a thick grumous fluid was oozing from the part. At the posterior portion a mass of flesh seemed to occupy the whole place. On exploring this part, the mass seemed pendulous, with a contracted peduncle. This was brought down with a torsion forceps, and removed with a bistoury as high up as the root. Having examined again the surrounding bone, and removed all that seemed diseased, the lip was brought down and the wound dressed. A fetid discharge frequently occurred through the nostril, and fluids at first would occasionally pass from the mouth through the sinus into the nose; but this gradually became less frequent, and the patient is now recovered.

In this case the disease seems to have arisen from a blow over the antrum, and the diseased tooth may, perhaps, have been the predisposing cause to the peculiar form which it assumed. In these days of chloroform, the operation described as being adopted by Mr. Fergusson may not be objected to; but it seems to be quite as severe as the importance of the case will allow; and, in the opinion of some, perhaps a little more so. The operation reported from King's College seems to be better fitted for a removal of some large portion of the superior maxilla than disease of the antrum alone; but, having chloroform at command, such views as these cannot have the weight they would have had in former years. I offer this case, however, only as an instance of a rare disease.—*Med. Times.*

ARTICLE XVI.

Diseased Temporal Bone.

A WOMAN, aged twenty, was admitted into the free hospital in March. She had great fluttering and irregular vibratory action of the heart, resembling erethismus mercurialis, but which subsided in a day or two. She was deaf, and had long suffered from intense ear-ache, with occasionally fetid discharges from the meatus. She was restless, sleepless and occasionally delirious, with no appetite. Soon after admission, an abscess formed just above the left collar bone, which discharged large quantities of matter until her death. The disturbance of the heart's action returned after three doses of gray powder but again subsided in about two days. She then had severe delirium, which abated after a sudden, large and very fetid discharge from the left ear. Finally, she had erysipelas, violent delirium, and coma, and died April 5.

A large excavated abscess, with sinuses in various directions, was exposed at the root of the neck, communicating with and extending through the whole of the carotid sheath. The internal jugular vein was full of matter, which was also found burrowing down in the direction of the vena innominata. A fibrinous clot was found in that vein, extending to the cava, which under the microscope was found to contain pus-globules. The lungs were filled with a frothy and purulent infiltration without consolidation; there was a small circumscribed abscess between the pleura pulmonalis and the lung on the right side, but not extending into the substance of the latter. The heart healthy; liver pale, and contained numerous fat cells; the kidneys coarse; the cerebrum was healthy; the arachnoid membrane appeared in parts smeared over with pus, more particularly in the posterior part near the falx, joining the tentorium. The tentorium covering the left lobe of the cerebellum was much inflamed, thickened and had matter between it and the arachnoid covering the cerebellum; and immediately beneath

this, on cutting into the cerebellum, a circumscribed abscess, the size of a walnut, was discovered. This was nearer the falx than the outer margin of the cerebellum; that part of the cerebellum which was in contact with the cranial bones was healthy. The petrous portion of the temporal bone was examined by Mr. Toynbee, whose notes are appended. The lateral sinus of that side was more conspicuous than the opposite one, shining through the dura mater, and darker colored, marking out the continuity of the abscess of the cerebellum with the disease in the bone, and with that in the carotid sheath. Dr. Heale considered that the prominent points were, that the palpitation was probably occasioned by the morbid stimulus of the pus in the blood; that the phlebitis was caused either directly by the disease in the lateral sulcus, or else propagated from the abscess in the cerebellum; that the abscess in the cerebellum was not occasioned by direct contiguity with the diseased bone, since healthy structure intervened, but was continuous with it in a tortuous direction by means of the lateral sinus; and that the cases of the accession of sleep in the cerebrum or cerebellum were secondary to disease in the auditory apparatus without the intervention of phlebitis either of the veins or of the sinuses.

Mr. Toynbee's Notes.—"The external meatus contained purulent matter; the glandular and periosteal portions of the membranous meatus were much softer than natural, and they adhered but slightly to the surface of the bone. The bone forming the upper and outer half of the tube was observed to present numerous foramina for the transmission of blood-vessels, much larger than in the normal state, and some of them surrounded by delicate layers of new bone; through the larger of these foramina small bristles could be passed, and they appeared to communicate with canals in the interior of the bone, which were continuous with orifices in the sulcus lateralis at its inner surface. The lateral sinus was of a dark brown color; the dura mater forming its posterior wall was entire. The sinus was full of coagulated blood mixed with purulent matter; the dura mater constituting its anterior wall, and which was in

contact with the surface of the bone forming the sulcus lateralis, was very thick and soft; portions of it were destroyed by ulceration, and the bone exposed. The bone forming the sulcus lateralis was of a dark color, and covered by masses of lymph and pus; its surface was rough, presenting throughout numerous orifices and tortuous grooves, this appearance being produced by the almost entire disappearance of the internal table of the skull, which (excepting two scales, each measuring about two lines in diameter) had been destroyed by caries. The destruction of bone by caries had advanced so far at one point, that an orifice about a line in diameter had been produced, which communicated with the upper part of the mastoid cells. The caries was not confined to the interior of the skull, the surface of the jugular process of the occipital bone having been destroyed. There was an orifice in the posterior part of the membrana tympani, through which, probably, the virus had been discharged, as it was not found in the tympanic cavity. The mucous membrane lining of the tympanum was much thicker than natural, and in the upper osseous wall were observed a few small foramina for blood-vessels, and a carious orifice, of a size sufficient to allow the passage of a small pin. It is most probable that the disease of the tympanic cavity was the effect of that in the external meatus and in the lateral sinus.

ARTICLE XVII.

Hemorrhage from the Tongue, successfully treated with Tincture of Matico.

Mr. Welch reports the following case as having occurred in the London Hospital during his dressership; a fruiterer, aged thirty-four years, states that on the 6th instant he received a blow upon the chin, whilst the tongue was protruding from the mouth, which caused that organ to be wounded by the teeth. Hemorrhage followed, so copious and uncontrollable, as to

render it necessary to apply for surgical assistance. After many unsuccessful attempts to suppress the bleeding, for three days, by several surgeons, he was brought to this hospital in a very weak state, and placed under the care of Mr. Luke. The wound was at first rubbed over with a piece of the nitrate of silver, but the bleeding still continued. A saturated solution of alum was then applied by means of pieces of lint, but still without success; and at last the tincture of matico was had recourse to, and used in the same way as the solution of alum. Fortunately it had the desired effect of arresting the hemorrhage permanently.

The patient states, that whenever bleeding from his nose had taken place it had generally continued for several days; also that when he was once bled from the arm it was found very difficult to stop the blood, which oozed through the compress and bandage for nearly four days. He further states that he was a patient in this hospital some years ago, on account of hemorrhage from the urethra, which continued for the space of seven days, and was at last stopped by keeping a large catheter for a long time in the urethra. He was also, it appears, at another time in this hospital, in consequence of having received a wound on his hand, which bled for several days, notwithstanding continual pressure was kept up by compresses, thus showing a very strong hemorrhagic diathesis. On inquiry, it is found that all the members of his family have the same hemorrhagic disposition, particularly his father.

The patient, after having been one week in the hospital, without any return of the hemorrhage, was discharged, with directions to take tonic medicines, and to use such other means as would be likely to have a tendency to strengthen his constitution and improve his general health.

ARTICLE XVIII.

Remarks on Mr. Stevenson's comment on Dr. Marshall Hall's, view of the Vis Nervosa, and on a case of great loss of nervous power resulting from a carious tooth. By J. L. Levison, Esq., Brighton.

In a note by Mr. Stevenson, in the Lancet of June 22, on the statement of Dr. Marshall Hall, "that the vis nervosa, or power of the spinal nervous system, is not electricity in any of its known forms or modifications," he asserts that the doctor's views are altogether gratuitous, and cites Mr. Crosse's experiments as conclusive evidence of a contrary theory, but which, to my mind, to use a legal phrase, was not "proven," because similarity of phenomena does not necessarily lead to the inference, that there must be an actual identity. For, with all deference to Mr. Stevenson, he has not demonstrated by evidence that the vis nervosa of insect life is one and the same with that which depends on a cerebro-spinal system of the higher animals, including man. I therefore venture an hypothesis, that there exists some modification or difference in the electricity (vis nervosa) of different animals? My reasons are founded on an accidental discovery I made a few years since in the Adelaide Gallery. It was whilst taking shocks from a series of powerful magnets, (the electro-magnetism,) and which affected me in a very different manner from the shocks taken from either a cylindrical or a plate electrical machine. From the latter there is experienced, immediately on completing the electric circle by the hand, a transmission of the fluid through the whole range of the spinal nervous system; whilst the shocks from the magnets were only felt from the fingers to the elbow-joints. So that after repeatedly verifying the accuracy of these observations, the conclusions appeared to warrant the supposition, that however similar the phenomena of electricity and electro-magnetism, they were not exactly identical; and having reflected on the many anomalies of the nervous system, showing

such marked difference in health and disease, I am disposed to think with Dr. M. Hall, "that the power (vis nervosa) of the spinal nervous system is not electricity in any of its known forms or modifications," but that this vis nervosa is something *sui generis*, and therefore cannot be regarded as identical with either electricity or galvanism, or electro-magnetism, or with electro-thermo-magnetism.

The reflex action of the nervous system, so ably elucidated by Dr. Marshall Hall, seems to favor such an inference, and to warrant the supposition, that whatever may be the peculiar nature or properties of the vis nervosa, it is subject to modification, in different diseases, according to the proximate cause of the primary disturbing influences—by the kind of tissues or organs involved, and by the peculiar idiosyncrasy of individuals. For how, otherwise, can we account for so many sympathetic disturbances, as, for instance, in ordinary caries of a tooth. The neuralgic pains may affect the ears in one person —the eyes of another, and, in the third, there may be violent throbbing of the arteries, with occasional intense suffering along the whole course of the maxillary branch of the fifth pair of nerves.

As an example of some remarkable disturbance from the presence of a carious tooth, and its irritation of surrounding textures, I may cite the following case:

Miss ——, a young lady, was brought in a carriage to my residence, to have her mouth examined. On being removed, she was supported by a lady on one side, and a man-servant on the other, and her entire muscular system seemed paralyzed. Her legs trailed on the ground, like useless appendages; her arms, when raised, fell powerless immediately, when unsupported; and even the muscles of the tongue were paralyzed, and in her efforts to speak, this important organ remained in a quiescent state. On examining the mouth, I perceived a *dens sapientia* of the lower jaw very carious, and deeply imbedded in the temporal muscle, just below the ridge of the coronoid process, in which locality there was extensive inflammation. I suggested the removal of the latter tooth; and, though I had

anticipated some advantage from the operation, the actual results astonished me. She instantly obtained the free motion of her tongue, which she immediately used to communicate an important fact—viz. "that ever since the time the tooth I had extracted had been making its way through the gum, she could date the gradual loss of power over her limbs," &c. I saw her about a month afterwards; she could then use her hand and arm: she was writing a letter! Since then, I have not seen what further progress she has made.

In this case, we had palpable proof that the phenomena could only be explained by assuming that the local irritation (shown by the great vascularity of the part) had, in the first instance, affected the maxillary branch of the fifth nerve, implicating the trunk of the nerve itself, and ultimately communicating this disturbed condition, by reflex action, to the spinal system. From this and similar cases, I think that there must be some modification in the vis nervosa, depending on some predisposition, local or general, or from some peculiar constitutional condition; for if such were not the case, why does not every tooth similarly affected produce, in all cases, uniformly similar consequences, in obedience to the law—"Like causes produce like effects?"—*Lancet.*

ARTICLE XIX.

Head-ache; Suppuration about the Left Ear; Disease of the Temporal Bone; Abscess in the Brain; and remarks. By E. L. Ormerod, M. B., Cambridge.

Case 30.—John B——, aged twenty-eight; admitted into St. Bartholomew's Hospital, Feb. 1846, under Dr. Hue. A carpenter, of a slight frame of body, temperate, always delicate, but not so as to call himself ill, till within the last three months, was admitted into the hospital a week before his death. His

illness commenced with head-ache; then an abscess formed and burst behind his left ear; matter used also to be discharged from the meatus auditorius externus, with temporary relief to his deafness. The pain in his head was very severe, generally occurring in paroxysms; but it could not be distinctly made out that these paroxysms had any relation in point of time with the suppression of the discharge from the ear. He was so deaf that communication with him was almost limited to signs. He had cough, with abundant expectoration of a white froth, mixed with strings of puriform mucus, tenacious, and with the sickly smell so often noticed in the expectoration of phthisical patients, and orthopnœa; but his appetite, with all his sufferings, was good, almost to voracity, to the last.

Body examined, eighteen hours after death.—Limbs nearly all relaxed; blood generally coagulated. The skull was remarkably thin, the capacity of the right half greater than that of the left. The pericranium was extensively separated from the left temporal bone. The dura mater was generally thin and transparent, marked with a black spot in a point corresponding to the semicircular canals on the left side, where also a red granular growth had sprouted up and become attached to the brain and its membranes. Beneath, the bone was blackened, and a communication was discovered with the cavity of the internal ear, which contained a thick whitish pus. The coats of the left lateral sinus were thickened, and had a coagulum adherent to the lining membrane, and much thick pus lay beneath the dura mater, in the part where the sinus curves forwards on the petrous bone, the membrane being here separated from the bone for a considerable space. The under surface of the left middle lobe was of a sooty color, and fluctuating to the feel. On section, about an ounce of green stringy fetid pus was discharged from a cavity, apparently not at all implicating the corpus striatum or optic thalamus, surrounded by dark gelatinous walls. No pus exuded from the point of the brain above noticed as having adhered to the dura mater when the brain was removed from the skull. The rest of the brain was healthy, excepting that the convolutions of the vertex on the left side were flattened.

On examining the petrous bone the meatus internus appeared quite healthy, but the parts about the semicircular canals formed a cavity, divided into cells filled with pus, and covered with a dark gelatinous matter, which was, indeed, all that separated this cavity from the dura mater at the blackened point above alluded to. The cavity communicated by one opening with the external meatus, outside the tympanum, this membrane being entire and having the malleus adherent to it in a sound state; another led to the cellular tissue behind the external ear; and a third communicated freely with the collection of pus beneath the dura mater on the inside of the skull.

The heart was small, with an old tuft of fibrin at the apex, but chiefly remarkable for the entire absence of fat from the organ. There was an old pleural adhesion about the base of the right lung; in the left interlobular fissure lay a gelatinous looking mass, and behind, quite at the base, was about fifteen ounces of green fetid pus lying in the angle of junction of the ribs and diaphragm, inclosed in a flattened cyst of about 3.5 inches in breadth behind, but gradually tapering off towards the front. The walls internally were coated with thick pus and fibrin, and there was every appearance of the collection having existed there for a long period. Within, the lungs were emphysematous, the bronchi injected and loaded with pus and mucus, and the lower lobes more or less consolidated by pneumonia, the appearances being in some degree modified by the presence of tough cellular bands in the right base, and gelatinous-looking infiltration in the left.

The coats of the stomach and small intestines appeared remarkably thin; the lining membrane of the former was rather thickly coated with mucus. The mesenteric glands were generally large, hard and yellow; the mesentery and omentum containing no fat.

Other organs presented nothing particularly worthy of notice.

The first point that requires to be noticed in this case, is to regret that only so much of the lateral sinus as adhered to the portion of bone removed from the skull was examined; a

further examination of this sinus, judging from what was seen, would have probably shown more extended traces of inflammation.

Considering the disease of the bone as the cause of the abscess in the brain, it was curious to observe how completely the cyst shut off the pus from any communication with the diseased bone. The same result of disease of the bone and dura mater, in producing abscess, entirely inclosed in the substance of the brain, is more strikingly shown, as in a more acute case in Dr. Abercrombie's third case of this nature, ("Diseases of the Brain," p. 35,) but yet more remarkably in Mr. Ormerod's "Clinical Collections," (p. 72,) where abscess of the brain followed upon mechanical injury of the bones of the head. The adhesion of the vascular growth from the dura mater to the brain is, perhaps, to be looked upon as the first step towards a spontaneous evacuation of the contents of the abscess, interrupted by death.—*London Lancet.*

ARTICLE XX.

On the Teeth as an Indication of the Progressive Improvement of the Human Race.

THERE is another important view in which the anatomy of these parts, in their progressive development, may be considered; one which bears intimately on the subject of ethnology, and which, in consequence, I took the opportunity of laying before the Ethnological Society of London in the following communication.*

* On the human mouth, read April 23, 1845.

"Glancing at the different degrees of development in man which come within notice, and the various features found to be prevalent, and made use of, with a view to characterize the varieties of man, we find them to be numerous, and to produce much diversity of appearance.

"When we observe the difference between the European and the negro in color; the long, flowing, light-colored hair of the Caucasian, and the black woolly hair of the negro; the well-balanced, elevated, and finely-symmetrical cranium of the Caucasian; the extremely prominent and well-furnished mouth of the negro, and the pinched perpendicular mouth, supplied with irregularly-arranged and imperfectly-organized teeth of common life—the question may well be asked—Has man descended from a state of perfection or risen from a low and deficient condition of development?

"The arguments which have been advanced on this subject have generally tended towards the adoption of one or other extreme in the scale of development, with a view to solve the difficulties regarding the original stock whence mankind have sprung. Here we must exclusively take into consideration possibilities, and these so far only as they are consistent with the experience and evidence of facts within our reach. We have to contemplate the natural scene of existence into which man must originally have been ushered. The development compatible with the due fulfilment of the exactions required from such a being, in such a state of existence, must, in my opinion, have been perfect, and one well-balanced both in its moral and physical attributes. A mind of morbid sensibility, such as highly cultivated social life in all ages presents, would have sunk under the exactions inevitable to such a state. It would not have been able to exert the requisite force to combat them, and it would have been too sensitive to have allowed man to have acted as a creature of simple instinct.

"If, on the other hand, the development of his physical frame and moral attributes had been of a low standard, he would neither have been possessed of strength and vigor adequate to

contend with the peculiarities of his state of existence, nor have had mind to comprehend, nor judgment to regulate it. He would have been totally defenceless against the violence of the elements, and the attacks of the animated creatures around him—man being naturally defenceless, and deriving all his power from the regulation and direction of his rational faculties. If the origin of mankind had really been that of a low and degraded scale of development, even if such a state were compatible with his existence, it does not seem to me that emancipation from it could have been possible. I am, therefore, at issue with Dr. Pritchard in the opinion expressed by him, that it must be concluded that the process of nature in the human race is the transmutation of the characters of the negro into those of the European. Such a view is not the result of my researches.

"I hope to show that there is no difficulty in supposing a derivation from one original stock, and that certainly the origin of the varieties in the development of the mouth must have been from a perfect type. The capability of the existence of man in different climates is only bounded by the extreme limits of the globe; his assimilative functions are omnivorous; his powers of articulation unlimited; and his physical capabilities combine all the possible modifications of the lower animals whose spheres of action are terrestrial. His mental powers are of the highest order; and, when we see that the inferior animals are endowed to so great an extent with plasticity and power of accommodation to circumstances, surely we cannot possibly deny to man a power of individual and hereditary adaptation adequate to fit him for the perfect enjoyment of such versatility.

"In regard to the form of the head, which presents the most notable ethnological marks, various points have been attended to—in fact, the relative proportions of every salient part. In reviewing the observations which have been made thereon, so far as they are connected with ethnology, no feature seems to me to bear so instructively on the solution of the various difficult problems involved in this study as the form of the mouth

and the development of the teeth. Everything would appear to yield to the necessities of existence, and the varied materials for sustaining that existence, the manner of procuring these materials, and their situation and nature. The mouth is the original and essential constituent of the apparatus for the assimilation of these materials, and in the lower animals it is peculiarly and beautifully adapted to their exigencies. In the mouths of men, too, we observe a medium type fitted to every peculiarity of terrestrial existence, and capable of performing every office exacted from the mouth in all the lower animals. Just as those peculiarities are exacted by external circumstances and situation, so we have a display of corresponding peculiarities of organization. As I have said on another occasion, it is a remarkable fact, that no other conformation of mouth than that of man, could admit at once of perfect articulation and mastication of his varied food. This organ may be regarded as fulfilling a most essential part in his intellectual life; for it is not only in him, in common with all other animals, the essential and original element of the apparatus of assimilation, but it is also the organ of intellectual expression, and, as such, is equally indispensable to the existence of the race, and an essential agent for the improvement of man's condition, and for his communion in social life. From mere observation, therefore, of the conformity of development of the anterior chambers of the head, with the presentation of the anterior portion of the mouth, we may be led to the general conclusion, that those of weak intellect were forced originally to emigrate to the more inhospitable quarters of the globe, for we find that the inhabitants of these climates are generally possessed of a low development of forehead, with a protruded jaw; while those still inhabiting the position of the original stock possess an elevated forehead and a perpendicular jaw.

"Blumenbach raised the maxilla into a place of importance by taking his characteristic diameters of the cranium from the conjoint form of the frontal and maxillary bones; and he regards them as the most important points on which the general character of the head depends. The facial angle of Camper

is a subject which still retains much interest, though that interest might probably have passed away had it not comprehended within its range the comparative development of the anterior or intellectual portion of the brain. Still, the interesting features of that portion of the subtending lines of the angle connected with the mouth, although not neglected, yet, in my opinion, require more consideration than has hitherto been allotted to them. That acquiescence in the harmony of nature, which seems to be irresistible, might probably call forth an assent to the accuracy of these general remarks; but, however close the reasoning on hypothetical principles may be, science demands demonstration from facts before we can freely or fully yield our assent to any proposition. We must inquire if deviations in the character of the mouth are simply the effect of deviations in the habits of individuals composing races; whether they are partial, and appear in individuals only, or general, and amount to a national or tribe characteristic. We know that the osseous portion of the animal frame is modelled by the soft parts, and that, in fact, the bones may be considered as mere passive accessories, affording points of attachment as well as protection to the soft parts, which are the springs by which the animal machine is worked in all its complicated movements. That passive character, however, offers, in its nature, a direct demonstration of the amount of activity of the soft parts connected with such portion of individual structure. In the present case it must be evident, and the instruction derived from the development of these parts must be regarded as direct. We must seek for the origin of the characteristic differences amongst the various groups of mankind, in causes which are natural, general, and indispensable to the existence of man in his particular position. We must also look for the origin of certain appearances in manners and customs. The form of the mouth, and the condition of the teeth, must be studied, in reference to the habits of infancy, as regulating the development, particularly as to the kind of food consumed, and weight must also be given to the effects of hereditary transference of character.

"The relative perfection of development of the organs generally, and the teeth especially, is affected by other causes, viz. the circumstances connected with general development, such as the periods of womanhood and marriage, and the habits of life, particularly of females. The nature of the food will always materially regulate the state of the teeth throughout life.

"There is a practical fact of fundamental importance, in reference to this inquiry, which will materially explain and illustrate the points under consideration. It is this, that the natural action of the lower jaw upon the upper may push out, evert, or expand the arch of the latter; but, on the other hand, it is impossible by any habitual or natural act performed by the mouth, or by the individual in any way, to bring in, or to contract that arch, so as to produce, out of the prominent jaw of the negro, the vertical or perpendicular jaw of the Caucasian. The prominent character may, therefore, be derived from the vertical, but the vertical never can be produced out of the prominent, by any habit or exercise of the function of the organ.

"The causes which produce the prominent development are palpably of common occurrence, and matters of every-day observation; and this feature of a race can only be reclaimed by the ameliorating influences of successive generations, in abstinence from practices which give rise to the eversion. Unless, indeed, the perpendicular mouth had been the original presentation of mankind, there is no exercise in which these organs could be employed, so as to develop such a feature; but I hope presently to show that the constitution of the parts individually, and of man and his manners generally, all conspire to the production of the prominent mouth from the vertical type.

"The vertical mouth is said to be the original development of the infant negro; the advanced mouth of the adult negro, therefore, is not congenital but factitious. We are also told, that the progeny of the negro of the southern provinces of the United States, owing to the different circumstances in which it is placed, has not the advanced mouth and its concomitant features after the second or third generations. It will be neces-

sary, however, to show that these parts, are of such a plastic nature as to admit of this factitious development. Their habits and exactions will also require to be considered, for the purpose of ascertaining how they become plastic, and are factitiously modeled out of their congenital arrangement; and, with a view to understand the nature and extent of the plasticity of the osseous portion of the organ, I shall now describe the anatomy of the mouth, and show how far these parts are under the influence of the moulding and controlling powers of the muscles, in the performance of the functions required of them. As I do not, however, intend to give here a strictly anatomical demonstration, nor yet a physiological disquisition, what I shall say will consist more of a general explanation of that which is necessary to be attended to, with a view to understand my theory, than anything else. I have already alluded to the complicated nature of the operations exacted of the mouth in articulation and mastication.

"The degree of perfection in development of all the different portions of the mouth, must regulate the degree of perfection with which the work to be performed by it is accomplished. Perfectly distinct articulation is not compatible with the prominent jaw of the uncivilized, neither is it compatible with the irregularly developed mouth of the civilized; nor is it possible for the diversified exercise of the organ in the different actions exacted for the division, comminution, and grinding of food to be well performed by such mouths, as social life is every day furnishing an endless variety. The irregularity of the teeth in such mouths causes the one jaw to become locked within the other, and thereby prevents such latitude of action as is adequate to the due performance of these varied duties. Mastication is performed by means of one portion of the mouth being passive, and the other active; the under jaw, consisting of bone and muscle, is the active, the upper jaw the passive portion; but although, collectively, the under jaw is active, yet this is again resolvable into a single portion acted upon, namely, the solid bone, and a number of parts producing the action, or in which the power resides, namely, the muscles. The force

employed is that of a lever of the third order, the principal force being exerted by the powerful temporal muscles inserted into the coronoid processes, and situated between the fulcrum, residing in the condyles, and the weight to be overcome produced by the substances for comminution, placed between the teeth, in any situation around the dental arch, but always anterior to the power exerted by the temporal muscles. Other muscles (the masseter and pterygoid) inserted into the under jaw, and deriving their origin from points of the bones forming the superior portion of the face, may be looked upon more in the light of controlling powers than otherwise. At the same time, they afford a certain direct assistance in elevating the under jaw, but their characteristic sphere of action is in varying and regulating the chief power produced by the temporal muscles. The principal duty of the remaining large muscle of the under jaw, the buccinator, is that of perfecting the parietes of the mouth. It forms an antagonist to the tongue in receiving the food into the mouth for mastication, and in retaining it within the influence of the grinding apparatus. This beautiful piece of machinery, taken as a whole, may be considered in the light of an inverted hammer and anvil, the hammer performing its work on the anvil of the superior jaw; and the machinery is perfect.

"But these parts, aided by the muscles connected with the chin, the tongue, the lips, and the fauces, have another duty of great delicacy and extent to perform, namely, that of articulation. This very essential function is the result of the combined action of all the muscles, though peculiarly delicate modifications, directed on the air that has been undulated into a sonorous state in its passage through the rima glottidis. In addition to this general view of the machinery and uses of the mouth in man, it will be necessary to examine, a little more minutely, the constituents of the skeleton of the mouth, and learn how that enduring portion in which the shape or ethnographic signs reside and become permanent is affected in different tribes, by the exercise of the functions exacted from the various parts. In this point of view, it may be useful to con-

sider the mouth under three aspects: anterior, posterior and median. We shall, in that way, be better able to appreciate the peculiar mechanism displayed in its contrivance.

"Let us first inquire what are the different duties demanded of these parts, and then point out how their performance is provided for. 1. There are certain duties exacted by all mankind of the mouth, namely, seizing, dividing, and comminuting or grinding the food. For each of these actions there exists a central point of energy. The central point of energy for the act of seizing, resides in the median division, where the canine tooth is situated. That tooth has the most powerful single fang of any tooth in the whole dental range; and, from possessing a strongly pointed cusp, is peculiarly fitted for the act of transfixion. The canines are most conspicuously marked in some of the lower animals, and are known by the name of tusks. They are also powerfully marked in carnivorous animals, such as the dog, from which, indeed, they have obtained their appellation; but they are not less so amongst the feline and other carnivora. The canine tooth presents a marked feature in the countenance of all animals possessing it. Its position is beautifully adapted for seizing securely, without interfering with the vision of the animal, whilst he is grappling with his prey, it being placed aside, and not in the direct line of vision. This is a matter of great importance when these teeth require to be brought energetically into action, as the duties exacted of them are of primary importance, and must precede those of the others. On each side of this latero-median and essential tooth, are teeth which are of an intermediate character. The lateral incisor teeth, anterior to the canine, partake of a mixed character, of the canine and central incisor, and the small grinders or bicuspids, on the other side, are intermediate in character between the canine and the true molars or grinders; thus the canines at each corner pierce and transfix whatever is placed within their sphere of action, and hold it fast, while the anterior and intermediate accessories, the lateral incisors, divide it anteriorly, and the acute and compound cuspidated small grinders divide it posteriorly. The other two

divisions of the dental range contain within each respectively a centre sphere of energy also, but very different in object. The anterior portion possesses the central incisors, but the power of their full action is not adapted to transfix, divide and tear, in a manner similar to that exercised by the powerful tooth we have just alluded to. They are the most distant from the power which acts on the jaw; and in the upper jaw they present a broad and chisel-shaped cusp, instead of the pointed and piercing cusp of the canine tooth, and the root even of the upper central incisor is about one-third less than that of the canine. On the whole, then, they have only about one-third of the power which the canine teeth have; and they are, consequently, only applicable to the division of small objects, which, as their name implies, is their true duty, assisted by the lateral incisors. The posterior division contains the machinery peculiarly adapted to the process of grinding or comminution. There is a central sphere of activity here likewise. That resides in the first large grinder, which is the standard tooth of division or comminution, crushing everything with great force upon which it is brought to act. In this duty it is materially and most efficiently assisted by the two small grinders in front, and the second and third large grinders behind. The centre of its action nearly corresponds with the centre of the great moving power of the jaw; so that there is a great concentration of force in this division. Such, then, are, generally, the duties exacted from these parts throughout all the races of mankind; and, having already explained the machinery by which the fulfilment of these duties is provided for, I come now to point out some peculiar considerations connected with the skeleton of the mouth, which will assist in explaining the ethnological signs exhibited in these parts.

"The most recognizable ethnological features are to be found in the anterior division, which presents, on the one hand, the prominent jaw and everted teeth of the negro, more particularly; and, on the other side, the crowded and irregularly-arranged teeth and perpendicular jaws of the Caucasian tribes. Both the other divisions of the dental arches, however, display,

in like manner, characteristic features corresponding with these two states of existence, and which I shall endeavor successively to bring under attention. The anterior portions of both jaws may be considered as concentric arches. The arch formed by the edges of the teeth in the upper jaw being produced from a little longer radius than that formed by the edges of those in the under, it is evident that if these two arches are forcibly brought into approximation, the external arch of the superior jaw, with its contents, must yield outwardly; because, by forcibly applying the crown of an arch to the internal portion of another arch, you obviously afford to the internal arch an incontrollable mechanical advantage. It is also evident, that the forcible retention of any substance between these two arches must increase the intensity of the mechanical advantage, and the tendency of the lower to evert the upper. If we reflect on the peculiar anatomy of the parts, it will be seen, too, that the superior jaw yields to a much greater extent than the inferior. The median suture of the arch of the under jaw is soon consolidated; whereas, there remains a permanently ununited suture in the upper. But its plasticity is still further provided for, and in a more efficient way, by the presence of the intermaxillary bones, which, as their name implies, are situated in the centre between the bones of the true maxilla. These bones have not been generally recognized as separate existences in the adult human subject, though it is universally admitted that they are present in infants, and that they are occasionally to be found distinct throughout life. Some authors have even asserted that the absence of these bones form a characteristic in man. But they are of practical importance; and although, if carefully searched for, may be recognized throughout life, yet it is quite sufficient for my present purpose to know that they are recognized in early life, as that is the period at which the characteristic features are given to the osseous framework, and which continue to the end of our existence. Separate centres of ossification are to be met with here; and the radiations of these ossific growths are directed to the maxillary bones on each side, the median suture dividing them in the median line.

The transverse suture runs almost directly across the palate from the centre of the one alveolar process of the canine tooth to the other, comprehending, in that manner, the whole of the anterior region of the dental range, and implicating, in development, the centre of activity of the central region of the arch. The intermaxillary bones thus effect, by their presence, such a form of arrangement as to admit of great plasticity in the anterior arch of the mouth.

"I have already briefly adverted to the ordinary duties required of the teeth situated in the anterior portion of the mouth; and a moderate exercise of these may be considered their particular duties in a somewhat advanced stage of cultivated human existence. If these teeth are duly exercised, and proportionately with the others, we have then a development properly fitted for all social requisitions, at once affording the power of perfect articulation and perfect mastication. Articulation is entirely performed in this region of the mouth; and although mastication, properly so called, is not performed here, yet it is materially interfered with by any deviation from a regular arrangement even in this quarter. Thus, where there is an excess of luxury and indolence in social life, we find, from the want of functional exercise, that the jaws are not duly developed, and that early anchylosis of the different sutures is the result. From the osseous portion not being properly developed, space is not afforded for the accommodation of the second set of teeth. The second or permanent teeth, in the early stage of infantile existence, are arranged in the jaw behind the temporary teeth, and, consequently, in the arch of a circle of a shorter radius than that in which their predecessors are placed; and, being of larger dimensions, and confined within a smaller compass, they are forced to overlap each other in the very early and unextruded state. The indolence of the system will thus permit these teeth to creep into external existence in fetal arrangement, and they really do appear in that condition in the heads of a great proportion of the adults of civilized life. In such cases, unless corrected by art, the mouth approximates a carnivorous type, and inertness of comminution or grinding in

the posterior or true masticating region is the consequence, from the impossibility of using the jaws in such an operation. Articulation, also, is sometimes materially interfered with from the unequal surface produced by the irregular arrangement of the anterior teeth upon which the tongue has to act. These irregularities of arrangement are some of the penalties of the irrational habits of social existence, and are never to be found amongst uncivilized races. Amongst races existing in a good climate, and where there is no deficiency of exercise or nourishment, a perfect development of the mouth, as well as of all other parts, follows. There is then a regular symmetrical arrangement of the teeth, the best adapted for perfect articulation, and for mastication, leaving the teeth perfectly arranged, and fully developed. The entire range then forms a perfect parabola, each tooth standing nearly perpendicularly to the portion of the alveolar ridge to which it is attached; and that, it is evident to me, is their normal development. That disposition is to be found in the vertical mouth of the Caucasian races, which, in my opinion, must have been the original development of mankind; and from which there is no difficulty in tracing all the varieties of the human species which have ever appeared on the face of the earth.

"Having attempted to explain the deviations from this type in the dental organs of social life by neglect of the exercise of the functions of the parts, I shall next endeavor to show how abuse, in a contrary line of habit, produces a development in an exactly opposite direction. I have described the arrangements which afford an extensive latitude of plasticity in the upper jaw, admitting of the parts to be modeled by the exercise of their ordinary functions. But in uncivilized life, extraordinary functions are called into action, and a great excess of energy is also thrown into those of an ordinary description.

"The ordinary duties required of the mouth in civilized life, as I have observed, are a moderate exercise of power for division, tearing, and comminution or grinding. In uncivilized life, however, there are superinduced upon these more powerful exactions, which have a great controlling influence over the

development of the parts. Man, in the uncivilized state, has but few instruments or tools to assist him in operations of any kind, and his teeth are ready substitutes, which on all occasions, from infancy to old age, he most unscrupulously resorts to. He attacks the roughest materials of all kinds with his teeth. He uses them to form and to fashion those materials in all sorts of ways; and thus his mouth has a prehensile character. He also uses his teeth as instruments for punishing his enemies, seizing his prey, and separating the assimilative portions of his food from those which are not. In fact, they assist him on all occasions, and the forcible tearing which is habitually exacted from him, owing to his want of artificial instruments and the little assistance he derives from cooking, tends, most decidedly, to evert both the upper and the under jaw. Even at the earliest period of uncivilized existence, habits prevail which powerfully contribute to that extra development which produces the prominent mouth. We learn from actual observers, that the uncivilized mother suckles her offspring for the protracted period of two years or more, and that the prominent mouth does not exist in infancy; but its development is assisted by the habit of long sucking, which acts powerfully on the then very plastic condition of the bones of the jaw. Indeed, in social life, we have frequent examples of the modified effect of habits giving a like tendency in infancy to the protrusion of the anterior portion of the upper jaw, such as the child being allowed to suck its tongue or its fingers, or having to be fed for a long period from a hard bottle.

"Acts calculated to have an effect in moulding the jaw are not limited to infancy; they may extend throughout life; and the prominent development will always be found in proportion to the ratio of power of the under jaw; and we have not only seen how well the anatomical arrangement of the osseous parts admit of these mouldings, but we must be satisfied that the design is perfect in allowing of such modifications; otherwise they would have been constantly exposed to injury by force from without, and concussion from within. This plasticity, however, is limited. An examination of the skeletons of indi-

viduals with prominent jaws will demonstrate that it is a simple modeling of the original quantity of material which is effected. Beyond a full and perfect development of the parts, there is no peculiarity excepting the eversion of the material, or the placing of it in an altered position.

"To form the mouth of any other animal than man, difference of structure and a different specific quantity of material, become necessary. There is an accumulation of effect in particular directions, occasionally discoverable, which produces aberrations so extensive that they cannot be explained but upon the admission of the principle of hereditary transmission. Thus, in what I have stated, and in what may follow, it is not to be understood that the effects described as occurring are to be attributed entirely to the exercise of the functions of the parts during one generation, but as being the result of a succession. What the appreciable effect in one generation may be it is impossible to determine upon the data which we at present possess.

"If it be fully confirmed that the mouth of the infant negro is not prominent, it will be interesting to study the extent of the hereditary influence, and the period of development of that influence. I have hitherto alluded principally to the circumstances attending the development of the anterior portion of the mouth, including the incisors and canines; but characteristic habits of different races produce also corresponding deviations in its posterior region. A crowded state of the teeth, from want of due expansion and development of the bones in which they are implanted, producing an irregular pressure of one against another in the progress of growth; and a faulty organization of the dental tissues, increased by that irregularity, are amongst the effects of constitutional inactivity, depending on the habits of social life. But there is one serious evil which is only known in social life; and that is, the derangement interfering with the functions of the mouth, which is occasioned by the arrested development of the jaw, causing a deficiency of room for the development of the wisdom tooth. This, at times, causes great distress; and even death, by a

slow process of torture. If that tooth at last struggle into external existence under such difficulties, it is, in a great majority of instances, found to be worthless, and only a source of torment to its possessor. On the other hand, however, we find that the rude uncivilized tribes of mankind possess a bold, well-developed, and healthy organization of structure in all the parts, and one free from irregular pressure. The wisdom tooth in them is so well developed, free in its position, and healthy in its structure, as to have induced some naturalists to consider themselves warranted in regarding it as a feature of approximation to the monkey tribe, although its good condition is nothing more than a feature of healthy development. The capabilities of this section of the mouth being limited simply to that of comminution, or grinding, it is not so much subject to the effects of abuse as the anterior portion of the dental range. Perhaps the only abuse of it is, that of exercise on food calculated to wear away the grinding surface of the teeth. The Hindu, the ancient Egyptian, and others, present examples of these surfaces being entirely worn away; and even of the teeth in the anterior and median portions of the mouth being reduced to truncated forms. The cause of this peculiar effect appears to be the roughness and grittiness of their food, and, in some cases, the almost exclusive consumption of food of a vegetable character. This is a powerful reason why man ought to be considered an omnivorous animal.

"Notwithstanding all I have said in favor of the more perfect development of the mouth in the rude and uncivilized tribes, they are, nevertheless, not altogether exempted from the ordinary diseases of the teeth. Independent of the habits I have referred to as affecting the arrangement of their teeth, and the development of their jaws, natural decay and disease occur, which we may refer to the state of health of the parents, the period of procreation, the circumstances under which their systems are at the time of production, and the inadequate nature of their nourishment, more especially in the early stages of existence. The general correctives of all these evils of development are energetic exercise, both of body and mind—residence

in a healthful climate, pure air, and a due supply of wholesome and nourishing animal and vegetable food—not only in regard to individuals, but to successive generations. Combe remarks that 'no object can be presented to the philosophic mind more replete with interest than an inquiry into the causes of the differences of natural character.' Every one must feel the force of this remark, and not only assent to its truth, but also to the converse of the proposition, and agree that nothing can yield more pleasure to the philosophic mind than an inquiry into the effects which the natural character, with its accompanying habits and customs, produces on the human frame. I am persuaded that a study of the latter, conducted on proper principles, and elucidated by practical facts, would tend to the explanation of phenomena which have hitherto been referred to erroneous origin.

"The circumstances by which man is surrounded in uncivilized life do not afford opportunities for the cultivation and enjoyment of the higher faculties; and, accordingly, we find that a low retiring forehead is a concomitant of the prominent mouth. Another marked concomitant is that feature of countenance which is produced by the high cheek bones. The osseous frame-work of that prominence is composed of the portion of the superior maxillary bone in which the grinding teeth are implanted, and the true cheek bone or malar, which, with the zygomatic process of the temporal bone, forms the arch through which the temporal muscle or powerful levator of the under jaw passes. The first of these portions, namely, the portion of the superior maxillary bone, containing the molar teeth, is surmounted by the antrum or hollow ball of the cheek. The fangs of these molar teeth embrace the floor of this hollow, in the manner of beams or joistings. It is evident, that as these teeth are powerfully developed, the fangs will be strong and divergent, and thus increase the volume of the ball of the cheek. The exactions of uncivilized life produce that effect, and we, therefore, have this consequence. With the increase of this ball, we have a consequent protrusion of the bones which rest on this portion of the superior maxillary bone, namely, the

malar, and through it the zygomatic process of the temporal. There is, however, a powerful concomitant increment to the protrusion of these latter bones, by means of the powerful action and development of the temporal muscle passing under it, and exercising its force with its consequent increase of bulk in expanding that arch.

"Although we have many well-authenticated cases recorded of these peculiar features of the human countenance being somewhat reclaimed or ameliorated by improvement in the circumstances of succeeding generations, yet there appears to be a greater or longer-continued tendency to the extra development of these than of any other. The prominent features in the high cheek bones of mountaineers are generally quite characteristic. The Scotch and Welsh highlanders of our own country are familiar examples. Exposure to a pure atmosphere produces in them keen appetites, which, by encouraging a vigorous mastication, may keep up the hereditary tendency. The concomitant of the flat nose with the prominent mouth, may be accounted for from the inversion of the superior portions of the intermaxillary bones forming the root of the nose; and this arises from the eversion of the inferior borders in which the teeth are placed. The bones thus, as it were, tilted, and receiving no permanent increase of material as they grow, equivalent to form new structures, are pressed upwards and backwards, and produce this derangement of feature by the inversion of the superior portions of the intermaxillary bones. The same causes will serve to explain the increased distance between the eyes of the uncivilized races, produced by the flattening and lateral expansion of the nasal bones; this being a necessary consequence of the expansion of all the other bones of the face.

"With regard to the other extreme of development which is generally to be observed in the mouths of civilized men, the concomitants are obvious, and quite as marked as those attending uncivilized men. It must accord with the experience of all, the precocity of intellect is very generally accompanied by an arrest of physical development and a languid constitu-

tion. When we meet with such an arrest of development and unhealthy secretion in the system generally, we must expect to find a similar arrest of development in the maxillary bones containing the cavities in which the teeth are lodged. This will occasion a deficiency of space for the proper arrangement and development of these organs, which, it is curious to remark, under all circumstances, follow the same train of growth as to size. They will also generally be found to be faulty in their structure when they arrive at maturity, or even as soon as they make their appearance externally.

"In addition to the ordinary diseases of the teeth called decay, the effeminacy of social life, the almost exclusive and unremitting exercise of the mental faculties, and a consequently superinduced morbid, nervous susceptibility, cause disease to appear in the sockets of the teeth, which produces their expulsion, although the bodies of the teeth themselves may be perfectly sound. That peculiarity of which both modern and ancient social life affords abundant examples, is frequently found to have existed in the sockets of the teeth of the ancient Egyptians,* but never to have been observed in races of men who have followed a natural course of life. I may remark here, that in the descendants of those who have lived long in social life, the cheek bones are not elevated, from the absence of encouragement to a powerful development of their basis; but the nose is elevated, owing to its root not being compressed as in the prominent mouth, and this feature is increased in its proportionate appearance from the absence of such a prominency.

"While that protrusion of the mouth is uncommon in civilized society, yet two varieties of malformation may occasionally be met with. The one caused by the projection of the upper jaw to a considerable extent over the under; and the other by that of the under beyond the upper. Generally speaking, both cases arise from an arrest of development in the jaw where expansion of the arch is deficient. The projecting upper jaw,

* Morton's Crania Americana.

however, as I have already stated, is very often the result of a habit of sucking the tongue or finger in infancy.

"It would be impossible, within my present limits, to appeal largely to history in support of all these facts and hypothetical enunciations; but if it were, I should hardly conceive it would be necessary, as a slight reflection must supply to the recollection of every one abundant general proofs in support of them, and which, on such an occasion as the present, is all that can be required. In conclusion, I cannot help simply remarking, having abstained for the sake of brevity from making many illustrative observations, as well as referential remarks upon the different points glanced at, that there is a curious train of results of peculiar forms of the mouth affecting the articulation of sounds, which it would be very interesting to study and to trace throughout all their modifications. The effects of the modifications are so very striking and decided, that I have no doubt an investigation into them would lead to many useful and interesting results."

Relation in respect of development between the cranium and the face.

The relation in degree of development between the cranium and face offers some variety at different periods of life, and considerable diversity amongst animals; these differences mainly depending on the extent of development of the organs of smell and mastication. The comparative size of the cranium and face is also an indication of the relative proportion of the brain to the inferior organs of sense above referred to, and hence becomes a means of estimating the proportions subsisting between the mental and the animal faculties. The facial line of Camper, and the angle which it forms with the base of the cranium, are the most simple of the numerous means which have been adopted to determine this proportion. The ancients were fully aware of the importance of this measurement, and entertained the belief that an angle approaching to a right angle was an indication of a generous nature, and it was ad-

mitted to be a conspicuous mark of beauty. Indeed, in the statutes and models of their heroes and divinities, we find them exceeding nature in this particular, and carrying their admiration of the principle beyond the precise limit of truth. Among the lower animals the facial angle of Camper is found to become more and more acute as we descend in the series of mammifera, and from the latter pass on to birds, reptiles, and fishes. But it must not be inferred that a mere elongation of the snout necessarily betokens deficient intellect, for this character simply indicates the existence of a highly developed organ of smell or mastication, without reflecting on the relative smallness of the brain. On the other hand, the great prominence of the anterior part of the cranium of the elephant, which gives him an aspect of superior intelligence, has no reference to the size of the brain, but to the unusual dimensions of the cells of the cranium; an organization having relation to the huge size and great weight of the teeth, tusks, and trunk, which require large muscles to support and move them, and an extensive surface of attachment for their origin.

Bearing then in mind that the variation in the facial angle has reference to the development of the mouth and nose, as well as to that of the brain, it may be interesting to glance at the relative admeasurement of this angle in several of the races of man, and in the higher quadrumana. For example, the measurement of Camper's angle in the

European is	80°
Mogul	75°
Negro	70°
European infant	90°

The difference between the infant and adult European is plainly referrible to the deficient growth of the face in the former, and not to superiority in cerebral development. In illustration of this point I may remark that the angle in the

Chimpanzee, adult, is	35°
Chimpanzee, young	67°
Ouran Outan, (Pongo,) adult	40°
Ouran Outan, young, previously to the exchange of the deciduous for the permanent teeth	65°

In many animals the facial angle is modified by the amount of expanson of the frontal sinus. This circumstance obviously affects its fidelity as a measurement of the development of the brain, and in like manner it is open to the objection of giving no idea of the breadth of the cerebral organ.—*Nasmyth's Researches on the Development, Structure, and Diseases of the Teeth.*

ARTICLE XXI.

Results of the Use of Chloroform in Nine Thousand Cases at St. Bartholomew's Hospital. By Mr. Skey.

One of the most interesting questions connected with the subject of operative surgery relates to the use of anesthetic agents employed for the purpose of suspending the function of sensation. This question has assumed a moral, as well as a medical type. It has been urged, that sensation is a natural function of the living organism, and that to suspend it by artificial agency is to set at nought the ordinances of nature; and that man is born to suffering, as evidenced by the sensibilities of his body. If the soundness of this argument be admitted, it would be difficult to draw a line which would define the boundary at which moral and *immoral* suffering meet; or to say, in what form of suffering our remedial agents may be justifiably resorted to. The sensibilities of our frame are not given us by nature to the end of promoting pain, but to enable us to avoid it. Corporal suffering is no part of the discipline of the mind; nor can it even be generally asserted that its excess exercises a salutary influence on the character. Every movement of our body instinctively points to the avoidance of bodily suffering; why, therefore, should we not as readily and unobjectionably employ the agency of anesthetic medicines for the purpose of suspending bodily pain, under the circumstances of an otherwise pain-

ful operation, as we endeavor to mitigate the bodily suffering of any other patient cast down on a bed of sickness? Will not the objection to the anesthetic action of opium to a region affected by a neuralgic pain, or to the system generally, hold as strongly as that of another agent of the same principle given to avert the pain of an operation?

The medical arguments against the use of anesthetic agents have a somewhat better foundation. That great and sudden determination to the brain, and an unnatural circulation of venous blood, result from their employment, is undeniable.

It is undeniable, if the quantity administered be large, and long continued, that symptoms resembling those of apoplexy present themselves, in the form of extreme congestion of the vessels of the face, stertorous respiration, and total insensibility; and it cannot be denied that, occasionally, its full administration leads to headache, vertigo and languor of some days duration; and cases are recorded in which death itself has followed in the course of an hour or more after its employment. It must be observed, however, in pursuing this question in strict accordance with the laws of evidence, that we have no *proof*, in the cases above referred to, that death was the direct effect of the supposed cause. The parties administering it were not fully experienced in the mode of its application. They entertain the *opinion* that death was referable to it, while it cannot be disputed that the fatal issue may be attributable to other causes: and, in one example, it appears more reasonable to refer the death of the individual to a suspension of the function of respiration by violence, than to any obnoxious agent circulating through the lungs or brain. On the other hand, the records of St. Bartholomew's Hospital point to its successful administration in upwards of nine thousand cases; in not one of which, including the aged and the young, the healthy, the infirm and the asthmatic, has its employment left a stain on its character, as an innocuous agent of good. Under all circumstances, its careful employment may be unhesitatingly resorted to in all cases, excepting only such as are marked by determination to the brain of an apoplectic type;

secondly, under circumstances of great and serious exhaustion from loss of blood ; and, thirdly, in diseases of the heart. In these conditions of the system, it is, perhaps, better avoided.

The agent in general use is chloroform, and one word may be added as to its administration. It appears indisputable that its influence on sensation precedes that on consciousness. I have employed it on several occasions, in which a patient has been conscious of all that has been passing around, and yet who has declared himself to have been totally insensible to pain. This state of his system has arisen from the moderate use of the agent, ample, indeed, for all purposes of utility, though somewhat difficult to regulate in quantity sufficient for the required object.

I prefer its gradual administration. I do not think it desirable to exclude atmospheric air, employed as a dilutent during the process of inhalation. Its influence should be gradual, not sudden. I consider its application through the medium of a cambric handkerchief laid on the face, preferable to the use of instruments made for the purpose of excluding atmospheric air, and food should be rigidly avoided before its administration, otherwise sickness will frequently follow.

Against the occasional convictions or objections of others to its employment, I place the strong, and to my own mind, the unanswerable fact, that it has been succesfully used in so large a number of cases in St. Bartholomew's Hospital since the period of its introduction ; that these cases have been indiscriminately taken, and that its objections have not yet made their appearance before the observant eyes of the medical staff of that institution, either by promoting danger during the operation, or protracting the recovery of the patient after it. In one class of cases its employment is especially applicable, viz. in that form of disease in which the pain of an operation is the chief warrant for its non-performance, and in which the recovery from a chronic disease is left to nature, that might be greatly hastened by the hand of art ; such, for example, as the removal of a piece of dead bone.

Up to the period of the introduction of chloroform, a surgeon

was very unwilling to subject a patient to the painful process of sawing and chipping away portions of dead bone, with a view to reach the medullary cavity, because the operation was both a painful and protracted one. The consequence was, that a hospital bed was occupied by a patient thus affected, for many months, to the exclusion, perhaps, of three or more claimants, who would have successfully occupied it. But by the aid of chloroform, the operation is now performed unconsciously to the patient, and the period of his recovery greatly abridged. With the three exceptions above mentioned, I cannot hesitate in strongly recommending its administration in all cases of large surgical operations; believing its discovery to be the greatest blessing conferred on the profession of surgery during the last century; and although I have seen its employment pushed, on many occasions, apparently, to the verge of apoplexy, I cannot say, even in such examples, that the good has not largely predominated.—*Operative Surg. West. Jour. of Med. and Surg.*

ARTICLE XXII.

A Report of Two Cases of Sloughing Phagedena. By JOSEPH DREW, M. B., London. House Surgeon to the Manchester Royal Infirmary.

Two cases of sloughing phagedena of the face have recently presented themselves in this infirmary at the same time, and since the best method of treating this affection is still *sub judice*, and knowing that all the old remedies are of little avail, two simultaneous cures through the influence of similar agents cannot but be of interest, and even possess some weight in favor of the means employed.

The first is that of Anthony McDonnell, aged nine, admitted to the wards of this hospital on the 18th of last October. From

the statements of the parents, he had been of robust health from infancy until about eighteen month ago, when he became the subject of some febrile affection, but concerning the nature of which they could not particulrrly specify. Six weeks before the date of his admission, he was attacked with acute and continued pain in the left cheek, soon accompanied by a small dark discoloration, which had rapidly increased in size, notwithstanding the treatment of one or two medical men, until it had attained its present dimensions ; the pinched physiognomy and the usual attendant symptoms of this disease were now fully developed, and, on examination, the dark colored slough was found to occupy the whole of the left side of the face, passing irregularly from a point just below the orbital surface of the superior maxillary bone, inwards and downwards along the side of the nose, implicating half of the upper lip, to about half an inch below the angle of the mouth, and backwards and downwards over the substance of the masseter muscle ; the cartilages of the nose were intact ; the immediate edges of the still living parts were deeply reddened, and to all appearances there was no tendency to the formation of a definitive line to its progression. McDonnell was at once put on the best meat diet, ordered daily fifteen grains chlorate of potash in divided doses, and four ounces of sherry wine ; to have the edges of the slough touched all round with strong nitric acid, and a linseed poultice repeated three times a day. Without entering into detail, the remainder of the treatment may be thus summarily stated : for four successive days the acid was freely reapplied, when rapid separation of the slough took place, and subsequently to its complete removal this potent agent was employed at two irregular intervals on a few suspicious points still remaining, so that altogether it was called into use on six different occasions. The fourth day of his admission he was attacked with diarrhea, but it readily yielded to a compound of opium, catechu and chalk mixture. On the cessation of this complication, the chlorate was increased to a scruple, and the wine to six ounces daily ; under these enlarged doses he continued gradually but steadily to improve in appetite and acquire strength, and was

made an out-patient on the third of December, or forty-sixth day of treatment. Some time before he left the hospital, it was very evident that a large portion of the superior maxilla would exfoliate, for the ulcerating line of separation was being formed, and bone loosened to an equal extent; and on the seventeenth day after going out, they had progressed so favorably, that evulsion of the parts was performed by the aid of a strong pair of forceps, two out of the four processes of this bone (the alveolar and malar) coming away entire, with two of the milk teeth still firmly implanted in their sockets; since then the surrounding soft parts have been so busy in throwing out plastic organizable matter and contracting, that at the time I now write, the disfigurement is not nearly so great as might have been expected, nor the breach so extensive that it may not be remedied at some future period.

The second case is that of Eliza Lomas, aged six, who was admitted on the 22d October, with an account from her parents that she had been extremely delicate from birth, and that she had suffered from the effects of the usual tribe of infantile diseases in a scrofulous constitution. The history of her present attack very closely resembled that of the boy above related: she had lately undergone some febrile affection; she had been ill a few weeks before presenting herself, and continued to get worse, in spite of medical aid; acute and continuous pain preceded the formation of a slough; and she, too, was now greatly prostrated by the depressive powers of the disease. It did not appear, however, that the morbid process had made any very rapid local progression, for the measurement of the circumference of the dead portion did not exceed that of a wafer of the largest size, extending from a point corresponding to the alveolus of the first molar tooth, completely through the side of the cheek, and implicating, at the same time, more internally, a small portion of the gum; the surrounding edges of the still living parts possessed a deep livid blush, and were found to be tender and somewhat painful.

Precisely similar treatment was put in practice in this case, too: at first fifteen grains of the chlorate, afterwards increased

to twenty grains daily, and four ounces of wine, increased to six ounces, the best meat diet, and local application of nitric acid; the latter was used on three successive days before the coming away of the slough, and was esteemed necessary only once afterwards. By the aid of these medicaments she rapidly improved in health, great contraction of the sides of the aperture took place, numerous healthy granulations were thrown out, and by subsequently uniting with others from the implicated portion of gum, this gap, though at first large enough to admit the middle finger, was completely closed, and she went out of the hospital, on the 10th of December, with a slightly sunken and puckered cheek, but in all other respects better than she had ever been before in her life.

On the fourteenth day of her admission I noticed that about three-quarters of an inch in front of, and somewhat above, the original solution of texture, a small, irregularly circular slough, three lines in diameter, had developed itself; and anticipating its tendency, gently tore away the surface, to ascertain the extent; already it had penetrated to a greater depth than the thickness of the cheek, but fortunately, on account of the very oblique direction, without yet implicating any portion of mucus membrane. Its progress was at once arrested by the strong acid, a clean surface was obtained in two days, kindly granulations were thrown out, and it soon healed, without ever opening into the cavity of the mouth.

Observations.—Sloughing phagedena of the face, in children, was recognised by the older writers on medicine; but the late Mr. Pearson was the first to bring the subject prominently before the profession, in a short essay, entitled "Canker of the Mouth," and appended to his "First Principles of Surgery," published in 1788. Since his time many men have thought it worthy of their attention; and though considerable additions have been made to the pathology, still it must be confessed that until very lately no advance had taken place in the requisite therapeutics. Contenting myself, however, by referring those readers who may wish to know more particularly concerning the disease to the writings of Mr. Pearson, Dr. H. Hunt, Dr.

Symonds, Dr. Cuming, and Rokitansky, (Sydenham edition,) I will proceed to notice a few of the peculiarities and points of interest in the cases just related.

1st. The respective ages of these little patients or at least the age of one of them, was considerably above the average of those affected with this disease. Mr. Pearson makes the date of liability vary from eighteen months to six or seven years, and Dr. Symonds from two to five years of age; but one of these instances is a girl of six, and the other a boy of nine, being, in the latter, two years beyond the maximum of Mr. Pearson, and four beyond that of Dr. Symonds.

2d. In each case the formation of the dark slough was preceded by violent and long continued suffering, differing, in this repect, with all the authorities I have been able to consult, for by them, it is generally stated, that very little pain accompanies either by development or the progression; but it would appear from these instances, that sometimes, at least, symptoms of acute inflammatory phagedena may be present. Dr. Hall believes that this affection is subject to the same causes of origin as phagedena of any other mucous part at an early age; and truly, there does not appear to be sufficient ground for supposing that it possesses any specific power of action, or that it is different to sloughing phagedena, affecting any part of the body at a more advanced age, for in one, as in the other, disintegrating granules, just before separation, impart their attributes by continuity of texture, to other portions of the surrounding tissue, which then immediately take on similar virulence of action and tendency to death; it will be found, too, that each possesses many like peculiarities, and when subservient to the power of a remedy, will give way to that endowed with similar virtues.

3d. In the course of the disease in the little girl, it was a point of considerable interest, that on the thirteenth day of treatment, a small, secondary slough should have formed, like, to all appearances, the nature of the primary one, yet not originating in the mucous membrane, or implicating it in the smallest degree, but in the skin, most clearly passing from the surface

to within. Calling to mind, at the time it was observed that many physicians believed in the contagiousness of a discharge from such sores, I carefully examined all the edges of ulceration, but found that, contrary to their being the appearance of any suspicious points, the whole surface had assumed a most kindly aspect, and taking this in conjunction with the facts, that the freshly diseased spot was situated above and in front of the original slough, and that the parts and face were cleansed at least once a day with warm milk and water, the evidence seemed sufficiently strong to show that the local disease may occasionally begin, *de novo*, in the skin, as advocated by Dr. M. Hall, and that it does not always, as most authors have stated, commence in the mucous membrane or gums. It is true that the precise point of origin of any local departure from 'health' is not a subject for speculation, but a matter of fact, after due observation; still the known correspondence in structure between skin and mucous membrane, and their intimate sympathies in other affections, would lead us to anticipate that a disease might at one time originate in the cuticular, and at another in the mucous tissue, although known by experience to affect after a directly reverse fashion, in the majority of instances.

4th. The termination of each case possesses its own peculiar interest; that of the lad, on account of the intensity of the disease a youthful constitution may be made to support, and the strong efforts made by nature to close a breach of surface so extensive; that of the girl, on account of the very fortunate recovery that may sometimes be expected to ensue, notwithstanding a delicate conformation of body, and a subjection to continued sickness from birth. Both cures will be rendered more complete at some future period, when, by a slight Taliacotian operation, the breach of substance still existing in the first shall have been filled up, and when, in the second, the band of adhesion uniting the cheek to the gum shall have been divided, and the side of the face once more released with a fair chance of regaining its former position.

5th. The profession is indebted to Dr. H. Hunt for the intro-

duction of chlorate of potash as a remedy for cancrum oris; but since he tendered his account of its virtues in 1843, many persons have thought proper to doubt its efficacy, and others have not hesitated to deny it altogether; still, though it may be quite true that the method of its action upon the organism is doubtful, it is only an accumulation of the evidence of experience that can establish or deny its merits as a medicament. When first made use of, it was thought to produce a beneficial influence by the diffusion of some of its contained oxygen; but as soon as it was objected that it might be detected unchanged in the urine of persons taking it, many thought this fact quite sufficient to upset the chemico-physiological theory of its action, without remembering that it had not been shown that the same amount of the salt might be collected from the urine as was administered by the mouth, and consequently not proved that a portion at least might not be acted upon and decomposed. As far, however, as the experience of five cases will enable me to judge, I should not think it advisable to trust to any constitutional treatment alone, any more than in that of sloughing phagedena in a different part of the body. It is essential that the portions of tissue which have taken on diseased action should be thoroughly destroyed, whether by the nitric acid, or other potential agent, or the actual cautery itself, after the fashion recommended by Mr. Obre, appears to be quite immaterial; neither, on the other hand, should I like to trust to local treatment alone, for the gradual death of tissue is merely the consequence of a constitutional disease; and though layer after layer of texture might be destroyed, still the root of the evil would remain untouched. Both methods should be put in practice at the same time; and I am sanguine enough to think that the person who will put his trust in them will find that this disease, by their combination, is as much under the influence of treatment as most other affections to which our bodies are liable.

6th. In applying the nitric acid it is a matter of some importance to instruct the little patient to inspire fully previous to its application, that the lungs may be filled with air, and thus guarded in some degree against the difficulty or even danger

that might result from the inhalation of nitrous fumes; and in the course of treatment it will be found of great advantage to separate carefully every slough as soon as formed, using, if necessary, even some little violence for the attainment of this object, on account of thus obviating to a considerable extent the great contamination of the air of inspiration.

ARTICLE XXIII.

New Method of Remedying the Accidents Caused by Chloroform. By M. Ricord.

The following letter, by M. Ricord, has been copied into the *Journal de Chimie*, Jan. 1850, from which I took it, having vainly attempted to get at the original. The subject of which it treats is important enough to merit attention; for few accidents can be more appalling to a surgeon than the death of a patient from the use of a remedy which that surgeon has administered, perhaps much against the wishes of the other.

"M. Ricord," says this Journal, "has just published a very interesting letter, on a method by which he has twice succeeded in rescuing from death two persons whom he brought to the verge of it by the exhibition of chloroform. This method is insufflation by the mouth, without any intermedium; but we will let him speak for himself."

"In my practice I have met with two cases in which the employment of chloroform had nearly been fatal; in both, its action was very rapid, and had not occasioned any previous excitement. It had been administered by means of a sponge, with large pores, which permitted, at least in appearance, the inhalation of a sufficient quantity of air.

"Case 1.—The patient who furnishes the subject of my first case, was a woman of about twenty-six, from whom I was about

to remove some growths of no great size. She was previously chloroformed, to which she only submitted after repeated entreaties, for she appeared to be excessively timid.

"The anesthetic effect of the chloroform was very rapid, for after a few respirations she appeared asleep; the sponge was removed, and I commenced excising the growths, but had scarcely given two or three cuts, when one of my assistant-surgeons told me that the pulse appeared to be failing. I now saw, in fact, that the beating of the heart was suspended, that all respiratory movements had ceased, and that the lips were livid, and hung down. The limbs were completely relaxed, and the paleness of the face showed that the patient was in that state of syncope which is the herald of death. All the remedies indicated in such a case were forthwith employed, as cold currents of air, sprinkling cold water on the face, tickling the nostrils, &c. Artificial respiration, by pressure on the walls of the chest, was tried.

"The syncope continued, and death seemed close at hand. I began to be uneasy, and determined to try direct insufflation. I applied my mouth to that of the patient. After some inspirations the dying woman gave a sigh, her chest heaved, the face resumed its normal color, the heart and pulse commenced beating in an appreciable manner, and the eyes opened; respiration had again brought into play all the functions of life, and the return of sensation was evinced by a smile. The patient was saved, and we escaped with the fright.

"CASE 2.—The second time that I experienced the dangers of chloroform was with a patient under my care in the Southern Hospital (Hopital du Midi.) He was a young man whose case required circumcision. And this operation was generally painful enough, he asked me to send him to sleep with the chloroform. A sponge, impregnated with it was given him to respire from: the action was very rapid, without any appearance of preceding excitement, and the patient was soon plunged into total insensibility. I performed the operation, but when it was concluded, the patient did not recover his consciousness, and remained in a state of alarming stillness. The pulse grad-

ually sank; the heart ceased to beat; all the sphincters were relaxed, and his cadaverous face seemed to testify that death was near.

"All the means I have indicated in the preceding case were tried, but without avail, and it became necessary to have recourse to direct insufflation, which had already so well succeeded in one case. Success crowned my efforts, and the patient recovered.

"Now, my dear colleague, may we not conclude, from these two instances, that in cases of impending death from the use of chloroform, direct insufflation from mouth to mouth, from the surgeon to the patient, is a more sure and efficacious remedy than anything else ever recommended in such cases; more certain and quicker than all the other methods of artificial respiration with tubes or catheters. Do you not, with me, think that the surgeon who should neglect having recourse to it, would take upon himself a very serious responsibility?

"I know well it will be objected that such a plan is disgusting and repulsive; but this is of very little importance to men whose life is professedly one great act of devotion."

ARTICLE XXIV.

Rhinoplastic Operation.

Mr. Fergusson performed this operation at King's College Hospital, in February, on a man of about forty, who had been under his care several times before. His nose had suffered very much, and nothing but a shriveled, flattened and compressed little mass was seen in the site of the original organ, the left ala being most depressed. This destruction had originally been caused by a blow, from which the ossa nasi and cartilages had suffered severe injury. The parts had healed very

slowly, and Mr. Fergusson, a twelvemonth ago, had made incisions near the eyebrows for the removal of necrosed bones. At that time, the man was promised that a new nose would be made for him. He had gone into the country, where he recruited his health; and now had come to have the operation performed.

Mr. Fergusson gave, in this instance, the preference to the Indian method; and the patient having been placed under the influence of chloroform, a triangular piece of leather, cut into the shape of the new organ, and made to suit the irregularities of the stump, was spread flat upon the forehead, with its base uppermost; deep incisions, with subsequent parings, were then made along the margins of the deformed nose, following the line where the sides of the flap, to be presently cut from the forehead, were to be implanted. When the paring had been carefully and regularly done on both sides, Mr. Fergusson cut out the skin and cellular tissue of the forehead, down to the periosteum, according to the shape above mentioned, and this being carefully dissected from above, downwards to the root of the nose, where the dissection was carried deep, to render the vascular connexion more extensive, the flap was twisted on itself, and its edges were brought in contact with the grooves previously made. An opening was here seen into the frontal sinus from the old exfoliation. The hemorrhage was rather considerable, and somewhat increased the already great amount of trouble which this operation entails upon the surgeon; the sutures were, however, very neatly applied, three on each side; they kept the transplanted structure very steadily in situ, and the angles of the raw surface on the forehead, were likewise approximated by sutures. The cavity of the new nose, which was partly supported by the shriveled remains of the old, was borne up by a small quantity of lint; the same was likewise put on the raw surface of the forehead; the parts were carefully and warmly wrapped up, and the patient removed.

Mr. Fergusson, in addressing the assembled pupils, remarked, that out of the various materials with which noses might be replaced, the patient had chosen his own skin, and that he had

thought it right to comply with his request; the more so, as he was a favorable subject for the operation, since the destruction of the organ had originally been caused, not by an idiopathic disease, but by a blow. The operation, as far as it had now gone, was only done in the rough; there was a great deal to shape out yet, until the new organ should be brought to a proper form. Mr. Fergusson observed, that this would be an extremely painful proceeding, were it not for the great boon conferred by chloroform, and that Mr. Liston had performed the same operation soon after the anesthetic use of ether had been introduced.

The patient, seven days after the operation, was attacked by erysipelas; he was delirious at intervals, particularly at night; the eyes and cheeks swelled considerably, and the new nose turned of a dull, reddish color. Still, the wound of the forehead went on contracting and granulating nicely. The delirium became soon so violent, that the patient was, at one time, hardly prevented from tearing off the new nose; it was, therefore, found necessary to use the straight jacket, and to give him a male watcher. He, however, became gradually quieter, and about eighteen days after the operation, he was more calm, dosing almost incessantly; his face assumed a more natural and sane expression, but when spoken to, he gave no answer, and appeared to be deaf. The treatment of the erysipelas and violent symptoms consisted principally in stimulants, as chloric ether and ammonia, opium, wine, &c. The nose, however, and the forehead, were looking very well; the latter was fast cicatrising, and the former seemed to have adhered firmly, especially at the root. The opening into the frontal sinus above mentioned remains patent, and seems not disposed to fill up. Twenty-two days after the operation, the patient was removed into the physicians' ward, where, after having given a great deal of trouble with delirium tremens, he is now progressing very favorably.

We had, a few days ago, an opportunity of seeing this patient, and were highly gratified at observing the firm manner in which the transplanted flap had grown to its new situation.

The nose, though in an unfinished state, looks remarkably well, the man having, of course, quite a different physiognomy. If it were not for the falling in of the incisive portion of the upper jaw, the patient would certainly not have to complain of his looks.

It would thus appear that the rhinoplastic operation has, in this case, endangered the patient's life; and though erysipelas had a great share in these hazardous results, it cannot be denied that this apparently slight operation is not exempt from danger; neither are the statistics encouraging. Out of two patients, Blandin almost lost one; Lisfranc had one death; and Dieffenbach has recorded two fatal cases out of six. The Italian method, where the flap is taken from the arm, *prima facie* seem less liable to the complications mentioned above; but it is so inconvenient that it has been very justly abandoned. The French method, introduced by Larrey, in which the cheeks furnish the materials, has advantages in some cases, but is likewise liable to accidents. (We had recently an opportunity of witnessing the latter method applied at St. Bartholomew's Hospital, by Mr. Lloyd; we shall lay the case before our readers when the patient's progress has been a sufficient time under observation.) We look forward with great interest to the further operations Mr. Fergusson may judge proper to perform upon this patient—viz. whether he will form a septum from the upper lip, as proposed by Liston, or remedy the falling in of the apex by the method he has himself followed, with success, in a former case—viz. by bringing the cheeks more in the mesial line, and giving, as it were, a new foundation to the nose; though, perhaps, a newly-made organ will not be so favorable to this mode of operation as to the plan proposed by Liston.

ARTICLE XXV.

Cancer of the Tongue—Division of the Gustatory Nerve.

Amongst the patients admitted under the care of Mr. Hilton, of Guy's Hospital, was a woman affected with malignant disease of the tongue, whose sufferings were so great, that an attempt was made to give her temporary relief by dividing the sentient nerve of the organ. Such direct surgical applications of physiological data afford an additional proof how advantageously anatomy, physiology and surgery, go hand in hand; and it is very gratifying to notice the anxiety Mr. Hilton evinced of doing something for his patient, in a case which baffled all attempts at permanent restoration. Division of nerves in physiological experiments is frequently performed; it has likewise been practiced, with but indifferent results, in tic douloureux; but we are not aware that the division of the gustatory was ever made before, with a view of blunting the sensation of the part, and, consequently, relieving pain.

Mr. Hilton's patient was a woman, about thirty-nine years of age, who was admitted in February, 1850, with a large, excavated, ragged ulcer, with hard, raised and everted edges, on the left side of the tongue, extending from the junction of the middle with the posterior third, to nearly the tip and the median line. The poor woman suffered much pain in the head and the left ear, which broke her rest; she was likewise troubled with a profuse flow of tenacious saliva, and unable to take solid food, as its passage over the ulcer gave exquisite pain. Mr. Hilton determined to remove the disease by excision; after, however, watching the effects of the actual cautery to the projecting and painful edges of the ulcer, and the administration of conium internally.

But intercurrent inflammation, and the formation of abscess in the submaxillary region, caused this line of practice to be altered, and Mr. Hilton, thinking that the above described symptoms might be relieved, if the sensibility of the ulcer could be

destroyed, and knowing that the operation of sloughing off the diseased parts by the application of ligatures would thus be rendered nearly painless, determined to divide the lingual gustatory branch of the fifth nerve, between the diseased portion of the tongue and the brain.

On the 20th March, the patient was placed in the recumbent posture, but with the head a little raised, opposite a good light, and the tongue being drawn out and steadied by an assistant, Mr. Hilton divided vertically, with a small knife, the mucous membrane, and the sub-mucous tissue, for about three-quarters of an inch, over the hyoglossus muscle, and above the sublingual gland. The parts were, however, much obscured by the almost constant flow of venous blood into the wound, but by continuing the incision through the upper edge of the sublingual gland, the nerve was exposed. Mr. Hilton took hold of it with forceps, and divided it with scissors. All sensation was immediately lost in the anterior part of the tongue on the left side, as well as in the ulcer; and either part could be seized and pinched with the forceps, without the patient being aware of what was being done.

Some pains and inflammation in the soft parts of the face and neck, occurred soon after; these were relieved by appropriate means, but the profuse flow of saliva had ceased, and semi-liquid food could be taken into the mouth without occasioning uneasiness. Portions of the ulcer were subsequently separated by ligatures, the operation giving no pain; but it was found impossible to include the whole diseased mass in the threads.

One month after the division of the nerve, the patient regained slight feeling at the tip of the tongue on the left side, the flow of saliva recommenced, and the ulcer became somewhat painful to the touch. Her health being much weakened, a cervical gland enlarged, and the ulceration spreading, Mr. Hilton sent her back to the country, judging that the disease was too far advanced for any more active surgical interference. She returned to Yarmouth, where she died about four months after her discharge from the hospital.

By the division of the gustatory branch of the fifth nerve, the sensibility of the ulcer was destroyed for a time, the patient could take food without its passage giving any pain; the excessive flow of saliva was diminished, and the application of ligatures to the ulcer did not occasion any suffering. Mr. Hilton thinks that further experience is necessary to fix the line of practice in cases of this nature, but he considers that the division of the nerve should never be omitted when it is determined to remove the ulcerating mass by the application of the ligature, a process which is known to be extremely painful.

ARTICLE XXVI.

Spontaneous Collapse of the Walls of the Antrum.

A PAPER by Mr. White Cooper was read, (and illustrated by a portrait and cast,) of a case of collapse of the walls of the antrum. The patient was a respectable young Irish woman, of healthy constitution and strong frame, who, nine years ago, perceived a dusky mark beneath the left eye; after a time this extended down by the side of the nose, and was followed by a sinking of the cheek in that situation; there was, however, neither pain nor uneasiness. After this had existed nearly seven years, gradually increasing in extent, she applied to Mr. Cooper on account of the tear flowing over the cheek. Palliative measures were adopted, and this unpleasant symptom speedily subsided. This was early in 1849, and since that time the sinking of the anterior wall of the antrum had steadily continued to increase, and has now given rise to considerable deformity, the appearance closely resembling that which would have arisen had a large portion of the superior maxillary bone been removed, and the integument sunk. The teeth on the affected side were in a most unhealthy state, and two were removed in 1849, by Mr. Alfred Canton, in the hope that the

morbid action might be arrested; but such has not been the case. Mr. Cooper has not been able to find a similar case related in any work.

After the reading of the case, various opinions in respect to its nature was offered. There was no syphilitic taint, and no external injury. It was conjectured that the deformity might be natural, that it was not very uncommon for the left side of the face to be smaller than the right; that it might have arisen from mollities ossium; that the antrum might have fallen in, from the contraction consequent upon the spontaneous cure of a disease in that cavity, by which the anterior wall was dragged inwards; that it might have arisen from falling in of the anterior wall from obstruction of the opening from the antrum into the nasal duct, and consequent atmospheric pressure. None of these solutions, however, were regarded by the author as conclusive or satisfactory.—*London Lancet.*

ARTICLE XXVII.

Caries of the Petrous Portion of the Temporal Bone.

MR. WILLING, of Hampstead, detailed at some length the case of a child, eleven months old, in whom there occurred caries of the petrous portion of the right temporal, implicating the spinous process of the sphenoid, and part of the basilar portion of the occipital, with complete disorganization of the vessels and nerves passing through their foramina. In addition to the signs of general ill health, the child had long been subject to a discharge from the right ear, and some months before death the left side of the face was palsied, the loss of power being more evident a week prior to disease. Pain was evidently felt on pressure on the mastoid. All these symptoms increased, the discharge became profuse, bloody, and very offensive, the pain on pressure more severe, and the parts yielded to the touch.

The child was sensible to within twelve hours of her decease, but died convulsed. The post-mortem appearances were those of congestion and effusion into the brain, a small abscess at the posterior part of the right middle lobe, while the bones were as above described.—*London Lancet.*

ARTICLE XXVIII.

The Use and Abuse of Arsenious Acids as an Agent for Destroying the Dental Pulp and Nerve, Curing the Toothache. By A. C. Castle, M. D., Surgeon Dentist, New York.

The author points out the terrible results of the indiscriminate use of large quantities of arsenious acid for the destruction of dental pulp. He shows, that however carefully and completely it may be preserved within the decayed cavity of a tooth from direct communication with the process of insalivation, it will gradually destroy the nervous fibrils within the fangs of the tooth, and thence penetrating to the periosteum and alveolus, will produce its characteristic and fearful effects on these structures. Instead of relieving toothache, the first consequence of its application is the increase of pain to a frightful and almost unbearable extent. Such torture cannot, however, remain long, without producing intense inflammation, which in most instances is followed by exfoliation of the alveolus, and its concomitant miseries. Dr. Castle, however, himself approves of the use of arsenious acids in very minute quantities, but not until after the nervous pulp has been paralyzed and destroyed by an agent more sudden and violent in its action. His plan is first to remove the diseased dentine from contact with the nerve; then to force a small wire of gold, which has been dipped in nitric acid, as far down as possible into the cavity of the tooth, which is attended with very little pain; he next inserts a pill of white

soap, containing one-fiftieth of a grain of arsenious acid, and covers this with wax or cotton dipped in creosote. After a week or two, the tooth, no longer tender, is fit to receive the stuffing of amalgam or gold leaf. The author proceeds to detail three cases, in which arsenious acid was freely applied: extreme pain was occasioned, followed, in the two latter cases, by violent inflammation and exfoliation of the alveolus; and he states that in fifty per cent. of the cases so treated, abscesses formed at the apices of the fangs; and that in another thirty per cent., the teeth were eventually obliged to be removed, from their acting as foreign bodies, and causing much irritation. The author then remarks—

"I have never found that the action of arsenic upon the dental tissues was in any way modified, in whatsoever mixture or combination it may have been exhibited, whether intended as 'emollient,' 'palliative,' or 'preventive,' any more than these combinations could or would be expected to produce such results were they to be taken internally in cases of suicide, or administered by the murderer as a cover, or to prevent the usual symptoms of arsenic in such cases."

We are inclined to believe that, entertaining these opinions, Dr. Castle is advising a mode of treatment which a matured judgment should consider as too dangerous, under any circumstances, for general use.

The author has never found it necessary to repeat the application of the arsenious acid; but with every care and attention, we are inclined to agree very cordially in the concluding paragraph of the paper:—

"A practice at all times to be reprehended, as being alike disastrous to the tooth as well as the health and comfort of the patient."—*London Lancet.*

ARTICLE XXIX.

On the Administration of Chloroform.

Upon the respective merits of the inhaler and handkerchief, in the administration of chloroform, it is only necessary to enumerate the fatal cases to prove that the handkerchief, and not the use of inhalers, has been the chief cause of the deaths :

I. Jan. 28, 1848.—Hannah Greener, aged 15, near Newcastle ; toe-nail operation; handkerchief.

II. Feb. 23, 1848.—Mrs. Simmons, of Cincinnati, United States ; extraction of teeth ; inhaler, no medical man present.

III. A young woman at Hyderabad, in Hindostan ; distal phalanx of a finger ; handkerchief.

IV. May, 1848.—Mad'lle Stock, aged 30, at Boulogne ; opening an abscess ; handkerchief.

V. Dec., 1848.—Young gentleman at Govan, near Glasgow ; intended toe-nail operation ; handkerchief.

VI. Jan. 24, 1849.—J. Verrier, aged 17, Lyons; intended amputation of finger ; handkerchief.

VII. Feb. 20, 1849.—Samuel Bennett, Westminster ; amputation of the toe ; handkerchief.

VIII. Aug. 23, 1849.—Mad'lle Labrune, Langres, France ; intended extraction of tooth ; handkerchief.

IX. Oct. 10, 1849.—John Shorter, aged 48, St. Thomas' Hospital ; toe-nail operation ; inhaler, given by a non-medical person.

X. Nov., 1849.—Girl Jones, Shrewsbury ; removal of eyeball ; not stated.

XI. Young lady, Berlin ; intended extraction of tooth ; napkin.

XII. Feb., 1850.—Artilleryman, Mauritius ; amputation of last phalanx of middle finger ; handkerchief.

XIII. Alexander Scott, aged 34, Guy's Hospital ; removal of portion of hand ; handkerchief.

These, I believe, comprise all the recorded cases in which death was clearly due to the administration of chloroform.

In one of the cases it is not stated that a handkerchief was used, though, from the context of the report, that seemed to be the case. Of the other twelve, an inhaler was used in only

two of the cases, and in neither of them was it used by a medical man; whilst in the ten instances in which death was caused by chloroform on a handkerchief, it was administered by a qualified medical man in every instance but one. There have been four cases in which death was accidentally caused by chloroform taken by the diseased parties when no one else was present. Two of these deaths occurred in Scotland. A handkerkerchief was used in each instance; and but for the practice of taking chloroform on a handkerchief, these persons would probably never have taken it at all. However, I have not included these cases in the above list. There was a death commonly attributed to chloroform which I have not included in the list—that which occurred at Mr. Robinson's, the dentist; for I believe that that was a case of fatal syncope, due to mental emotion in a subject with fatty degeneration of the heart, and great enlargement of the liver. He was only just beginning to inhale when he suddenly died. In that case an inhaler was employed.

Other supposed causes of the deaths from chloroform have been suggested by various writers, besides those above mentioned, only one of which I shall notice. Many persons, especially in Edinburgh, have attributed the fatal cases to the impurity of the chloroform employed; but, in the first place, it has been examined in nearly all the cases, and found to be quite good. And again, although it might contain impurities which would cause irritation at the time, and subsequent disagreeable effects, it could not become contaminated with any thing likely to cause sudden death; and, before this assertion is repeated, we ought to be told with what substance stronger than itself chloroform is liable to be contaminated. I fully admit the necessity of having chloroform, as well as other medicines, quite pure; as its adulteration, though not liable to cause death, may cause disappointment, and other disagreeable consequences; and it must also be admitted, that this, as well as other drugs, is liable to impurity, both in London and elsewhere. I am of opinion, however, that impure chloroform has not been supplied by the respectable houses of this metropolis. I generally use

Mr. Morson's chloroform, but have, at one time or other, used that of Mr. Squire, Mr. Jacob Bell, Mr. Bullock, Mr. Hooper, Mr. Taylor and others, and always found it good. I have also used the chloroform of Messrs. Duncan, Flockhart & Co., of Edinburgh, and cannot give it any better praise than by saying it was equally good. If the Edinburgh people wish to assert that they can produce something better than pure chloroform, they must call it by another name, for it must be a different medicine.

The real cause of the deaths from chloroform, undoubtedly is, that in each case the patient has had an overdose: I mean more than was necessary to render the patient, or one of similar size and strength, insensible. By a dose of chloroform, however, must be understood the quantity that is in the system at one time, and not the quantity inhaled during an operation. For instance, when the inhalation is left off for two or three minutes, a great part of the chloroform exhales by the breath, and the patient, perhaps, requires to inhale a little more. This should be considered a repetition, and not an increase of the dose.

The necessary points to be observed, in order to avoid the risk of giving an overdose, are—1st, that its vapor be systematically diluted with a sufficient quantity of air, by means of a suitable apparatus, when no accident can happen without the continued neglect of evident warning symptoms; and 2d, that the person administering the chloroform should keep his whole attention directed to the patient, and be able to understand all the signs that occur. I have not space here to go fully into the description of the signs which indicate when the inhalation would cease, and an operation begin, but would rather refer to some papers of mine "on Narcotism by Inhalation," in the Medical Gazette, 2d vol. for 1848, and also to some papers on "Chloroform," by Dr. Sibson, in the same volume. I may state, however, that it is chiefly by attention to the state of the respiration and the eye, that danger is to be avoided. The pulse may be felt, as a physiological inquiry, or with reference to the operation, but gives no guiding information concerning

the chloroform, for the following reasons: When the vapor is diluted to a safe extent, it might be continued till death, as I have ascertained in animals, and the pulse would still beat distinctly for many seconds after the respiration had ceased; and if, on the other hand, the vapor be of dangerous strength, the heart might suddenly cease to beat, and the first intimation of danger from the pulse would come only too late.

If chloroform be given on a handkerchief at all, not more than from fifteen to twenty *minims** should be put on at once. In this way, it may be given in midwifery, as that quantity, and often much less, suffices for each application; but in surgery, where the full effect is required, this would be insufficient. —*Dr. John Snow in reply to Prof. Lizars. Dub. Med. Press.*

ARTICLE XXX.

Dislocation of the Lower Jaw.

AN important addition has been made to practical surgery, in the introduction, by M. Nélaton, of a new, simple and efficacious process for the reduction of dislocation of the lower jaw.

* * * * * * *

According, then, to M. Nélaton, the obstacle to reduction, existing neither in the resistance offered to the condyle by the eminence of the transverse apophysis, nor in muscular action, it must be sought for, not in the articulation itself, but in neighboring parts.

"In front of the temporo-maxillary articulation," says M. Nélaton, "we find the temporo-zygomatic fossa, in which the coronoid process is lodged when the mouth is closed. Before and behind this excavation are placed two eminences, the posterior formed by the transverse root of the zygoma, the anterior by the articulation of the superior maxillary with the malar

* Drops of chloroform are widely different from minims, being extremely small.

bone. At the inferior part of the suture which results from the union of these two bones, there exists a tubercle sufficiently prominent, limited within by a notch formed by the smooth edge of the malar process of the superior maxillary bone, and often on the outer side by a little, elongated, almost oval fossette. This eminence, to which we may give the name of malar tubercle, is situated at about the distance of a centimetre from the coronoid process. In place of this tubercle we have sometimes met a plain surface, and even in certain subjects a notch more or less deep; but the presence of the tubercle is the rule. With regard to the coronoid process this latter presents great differences; very short in some, and elevated scarcely to the level of the condyle, it is found very much elongated in others; sometimes directed upwards, at other times obliquely outwards, so that its summit tends to meet the zygomatic arch; in some instances directed forwards, and distant from the condyle; in others directed backwards, so as to approach it." "These facts, well established," continues M. Nélaton, "let us examine the pathological condition. Having, as I have said, undertaken some experiments on the dead body, with a view to verify the prevailing doctrine on luxations of the lower jaw, I have ascertained: 1st, as M. Malgaigne observes, that if the condyle of the lower jaw is carried forwards without passing the point which the cavity of the capsule permits it to reach, the displacement disappears forcibly as soon as we approximate the dental arches, the eminence of the transverse apophysis presenting no obstacle to the return of the condyle. 2d, that if the anterior part of the capsule be cut or torn, so that the condyle can pass out of it and advance a few millimetres, we remark that the displacement is permanent, not, as is generally believed, because of the elevation of the transverse root, nor by reason of the contraction or tension of the muscles, but because the summit of the coronoid process comes to butt *(arc-bouter)* against the inferior and anterior angle of the malar bone, and is lodged in the little fossette which we have said exists often at this point. The contact of the summit of the coronoid process with the malar bone appears to us, then, to constitute an indispensable condition in the true dis-

location; and for this the displacement need not be extreme; it suffices that the condyle be advanced from three to four millimetres. The external lateral ligament remains intact, the capsule is torn at its anterior part, and the inter-articular cartilage either accompanies the condyle in its displacement, or remains beneath the transverse root, according as the rupture is either above or below its anterior edge. . . . . It results from what precedes that it is not on the condyle that we must fix attention to find the cause which renders the dislocation permanent, but on the coronoid process and the malar bone, since it is in the contact of these two bones that almost all the difficulty of reduction resides."

* * * * * * *

To succeed, according to the process of M. Nélaton, it is necessary to act either by the interior of the mouth, taking a point of support behind the mastoid processes, or externally, by the operator taking a position behind the patient, and making pressure on the coronoid process, pushing it downwards and backwards, to disengage it from contact with the malar bone, at the same time that the patient opens the mouth. In ordinary cases, a light pressure is sufficient; but if more force be requisite, M. Nélaton advises the head to be supported by an assistant, or a band to be passed around it, in which the operator can engage his index and middle fingers, while the thumb must be brought to bear on the coronoid process.

The method of reduction which we have now described has been before the profession for more than a year. We have seen the success which has attended its use in the author's hands; and when we reflect on the great difficulties frequently presented to the surgeon in attempting to restore the lower jaw to the glenoid cavity, we cannot but feel that M. Nélaton will have conferred a signal benefit on humanity, should the rigid test of experience prove that his anticipations of the facility of reduction by the method he has devised, are as well founded as we are confident his views of the pathology of this luxation are correct. We shall anxiously await the verdict of the clinical surgeons of Dublin on the subject.—*Southern Med. and Surg. Journal.*

EDITORIAL DEPARTMENT.

Dr. Gardette and his Proposition, once more.—In the last number of our Journal, we published a letter from Dr. Gardette, of Philadelphia, to the editor of the American Journal of Medical Sciences, suggesting the addition of a professorship of dental surgery to the several Medical Faculties, as a substitute for any scheme of separate collegiate education for dentists. In our comments, we endeavored to be kind and respectful to Dr. Gardette. He had an indisputable right to make the suggestions he did, and there was nothing in his language to which, personally, we could take offence. But the suggestion itself we reprobated, as we believed it deserved. We considered it altogether absurd, as any attempt to act upon it would be impracticable. Dr. G. seems to be much affronted at our remarks, and he has rejoined in the Medical Examiner in a tone, which, as his friend, we regret. Though he had been unwise, there was no necessity to be offended. He says he has done his part in this matter "with no more vanity, interest and ambition about its adoption, than became a plain man," &c.! How much of vanity, interest and ambition Dr. G. may think becoming, it is not for us to determine.

After a careful examination of Dr. Gardette's rejoinder, we cannot perceive that we have done him injustice. We reprinted the whole of his letter, and our readers shall be our judges, whether we ascribed to the writer a single expression, or opinion, not plainly justified by his own words. We attempted to show that the working of the scheme would be impracticable. In this we are pleased to find that Dr. G. now agrees with us. He now declares, that he never intended to sketch the manner in which the scheme was to be carried out. That, he left entirely to the wisdom of the Trustees and Professors of Medical Colleges, who, from their familiarity with the subject—and their long manifested interest in dentistry, would, doubtless, be able to do what Dr. G. himself dared not to undertake, and what we, in endeavoring to do, have produced only an absurdity, which Dr. G. cannot even look at without indignation.

In one respect, however, the Dr. is much plainer than before. He now tells us, that he does not expect practical nor mechanical dentistry to be taught in *his* colleges. These, he says, are to be taught by the private preceptor, "and it is there that careful, judicious operators will be made, whether they listen to lectures in medical or dental colleges."

The inuendo in the last paragraph is too plain to be misunderstood, and too unjust to be permitted to pass without notice. Dr. Gardette knows very well, that dental colleges do not expect to make dentists, by lectures merely. He knows that in the Baltimore College, which he mentions particularly, a great part of the means of the institution, and time of the instructors and students, are devoted to operations upon the mouth of the living subject, and the mechanical work incident thereto. He has himself examined operations performed by the pupils of the school, who learned in the institution to perform them, and he has been very decided in his expressions of satisfaction at what he saw. As to the fact, that careful and judicious operators may be made in private offices, we do not doubt, nor do we doubt, that careless and injudicious ones are made there. While the majority of those who live by dental operations are both careless and injudicious, it is likely that a majority of the students will be so too, and we should like to know, how the Trustees and Professors of medical colleges will distinguish between them. How many practitioners of dental surgery in Philadelphia, is Dr. Gardette in the habit of considering careful and judicious, and capable of instructing students? We leave him to answer the question. Dr. G. denies that he suggested, or intended, that dental students were to be thoroughly instructed in medicine. He considers such an interpretation of his language as evidence of consternation, producing confusion of ideas.

Where the confusion is, will be easily ascertained from the following quotation from Dr. Gardette's proposition. "*They* (the students) *should still be required to earn and receive a diploma with the title of M. D., as a guarantee of fitness to practice and a claim to confidence as dentist.*"

In his rejoinder, he writes, "*I have suggested no scheme according to which dental students are to be thoroughly instructed in all the branches of medicine. The abstracted professor, I must suppose, imagines these statements.*"

Now, how Dr. Gardette expects students to *earn* and *receive* the degree of doctor of medicine, without being instructed in all the branches of medicine, we confess we do not comprehend. Probably, in this respect too, Dr. G. does not pretend to prescribe the manner, but leaves the details to the wisdom of the Trustees and Faculties of medical colleges.

One thing is evident, that in Dr. G's scheme, the dental student is to have no excess of theoretical, to counterbalance his deficiency in practical, knowledge.

In this connection, Dr. Gardette become facetious. He thinks that we must have been much confused, indeed, when we termed his scheme "suicidal," and thinks we "mistook him for a dental college." Now we assure the Dr. that whatever mistakes we may have made about him, we never have erred so far as that. But we admit, that the degradation of dentistry by his hand would not be "suicidal" to the man who secretly despised it, and who felt the name of dentist a reproach.

Dr. Gardette sneers at us for assuming too much consequence for dental colleges. It does not become us to contest this question. Fortunately an arbiter is at hand, to whom Dr. G. cannot object. We will let him decide. Of Dr. Hullihen, Dr. Gardette says, "A gentleman who fulfils the duties of both medical practitioner and dentist with such distinguished abilities as to be an honor to both professions, has traced truthfully the origin of the neglect of which the dentist complains." Fortunately the same gentleman has traced truthfully the consequences of the institution of dental colleges, in the following language: *"It was not until the founding of this* (the Baltimore) *college—until medical science and mechanical skill were here first taught, both separately and combined, as the only plan to make an accomplished dental surgeon, that dental surgery became a science in spirit and in truth."*

Inasmuch as students of dental surgery, generally, do not avail themselves of the instruction given in dental colleges, Dr. Gardette infers, that if dental lectureships were established in medical colleges, they would be attracted to these institutions. But, if he were as well informed upon this subject as we are, he would think differently. If such lectureships existed in all the medical colleges in the United States, we are confident the lectures would not be listened to by twenty-five students of dentistry. To foresee the consequences, then, that would be likely to result from the establishment of such lectureships, requires not the gift of prophecy. A majority of the graduates who failed to obtain medical practice, and having no other means of subsistence than the avails of their profession, would naturally turn their attention to this specialty, and thus, in a short time, the whole country would be overrun with dental empirics of the lowest grade.

As an argument in favor of his scheme, Dr. Gardette says, "It is common with dentists of high standing, to require of their pupils that they attend medical lectures and take the degree of M. D.; and this is the case *even since the existence of dental colleges.*" Without supposing for a moment, that Dr. G. made the above statement with a view of making a wrong impression upon the minds of his readers, the correctness of it must be regarded as exceedingly questionable. Touching the matter to which it refers, we presume, we are as well, if not better informed than Dr. G., and we have no hesitation in saying, that in nine cases out of ten, even among dentists of "high standing," no such requirement is made, and in the majority of cases where it is, it is not complied with. Within the last few years, several dentists of "high standing," have sent their pupils to dental colleges. In a number of other instances, students of dentistry, after having passed through Dr. Gardette's corriculum and graduated in medical colleges, have received the instructions of dental colleges, and frankly acknowledged afterwards, that they obtained more information there, in one session, than they had been able to do by the most diligent application in two years elsewhere.

There is one more paragraph of Dr. Gardette's paper which we are compelled to notice, though we do it with unfeigned reluctance. We cannot shut our eyes to what must be visible to all readers. It would be affectation to pretend not to understand the "animus" of the following sentence:

"It has been stated to me that the Baltimore Dental College has been chiefly sustained thus far, in its feeble existence, by the talents and influence of its medical professors, and that one of these, who has been the main prop of the institution, has of late years designed to abandon it as an expensive, unsuccessful attempt."

Who made this statement to Dr. Gardette we of course cannot tell. We trust he was somebody whose previous character for carefulness of speech will bear the deduction which must be made for the carelessness of this. As the faculty have never yet raised the question among themselves, as to the individual importance of its members, it might have been as well for others not to have troubled themselves about it. We certainly feel no disposition to undervalue the "talents and influence of the medical professors." We are glad that Dr. Gardette, even through contention, gives them proper credit. As he admits that we have done some service in the march of improvement, upon the whole, the faculty have escaped from his hands tolerably well. If it be true, that our medical colleagues have done more than we to sustain the school, we are glad of it. We have done what we could, and like the old Spartan who lost his election, we are consoled to know that the faculty possess at least two better men than ourselves.

In one thing, however, it is necessary to correct the Dr's informant. The students are not more attracted towards theoretical than practical study. The tendency is the other way. The infirmary and mechanical rooms are so attractive that it requires all the talent of our colleagues, and the stringent regulations of the school, to obtain sufficient consideration for the medical branches. The habits of dentists, such as dentists have been, and for the most part yet are, is to undervalue collateral scientific acquirements and make dentistry, as far as possible, a mechanical art. The present constitution of dental colleges tends to check this tendency. Let them be abolished, and let Dr. Gardette's scheme be tried instead, and suppose, for the sake of argument, that students of dentistry would avail themselves of the instruction of medical colleges, the consequence would be, that while a very few from offices of skillful men would attend the college lectures, a great many more from offices of ignorant pretenders, would do the same—none of them would be educated as physicians, very few as dentists, and all would be thrown upon the community with the accredited pretensions of graduates. The distinction between educated and uneducated, or trustworthy and unsafe dentists, would never be drawn—dentistry would not have a higher social position than now, and Dr. Gardette would find that in grasping at the shadow he had lost the substance.

With regard to the statement that one of the medical professors "who has been the main prop of the institution, has of late years designed to abandon it," it is necessary to say that Dr. Gardette has been entirely misinformed. We cannot pretend to say to which of the gentlemen Dr. G. alludes. We regard both of them as "props" to the institution, and we are happy to say, that unless some untoward accident should occur to remove them from this world of toil, they are likely to remain "props" for many years to come. So far from being discouraged with the undertaking, they both believe that the severity of the struggle is over, and the success of the school certain. That men like Dr. Gardette may disappoint their hopes and impede the progress of those who are toiling for the real good of the profession is possible, but the ultimate success of any undertaking of the kind in question, must depend upon the wants of community and its adaptedness to them. The want exists, and until something better than Dr. Gardette's proposition is offered, dental colleges are the only means adapted to supply the want.

In conclusion, we would direct the attention of our readers to an able and admirably written article, in another part of our Journal, by Dr. E. Townsend, of Philadelphia, showing the inexpediency and impracticability of Dr. Gardette's scheme.

Neuralgia.—Chloroform is now being used other than as an anæsthetic agent, and would seem highly efficacious as an ointment in neuralgic disturbances. Judging from what is said in French journals, the best, simplest, and most reliable preparation appears to be in the following formula:

Chloroform,	60 drops.
Hogs lard,	1 oz.

Mix in a mortar, and use several times per day, by rubbing on the affected part. Many forms of neuralgia resisting all the means used to subdue them, were said to yield kindly under the application of this. We intend giving it a fair trial, and will report; which we hope will be done by some of our readers also.

Epulis.—Epulis of the gums, is too often temporized with, and allowed to increase or become malignant from the simple, small and benign tumor at its origin, by the use of escharotics and various inefficient styptics.

If the tumors originate between the teeth, it is more than probable, that they are carious, and are most frequently the cause, and as a general thing, one or both must be extracted. If not followed by removal of the trouble, the tumor must be cut away, and this is the proper treat-

ment, under all circumstances, where extraction does not afford relief. It is generally considered to be caused by decayed teeth, diseased fangs and *bad operations in dentistry.*

Considering the fearful consequences this disease is occasionally attended with, prompt treatment becomes, in all cases, highly essential, and this treatment consists in excision of the affected part.

Mr. *Liston* expressed the opinion, that there was probably more surgery about the face and head, than in the rest of the body taken together, and many originating and depending on irritation and inflammation in the mouth or the organs within it, the superior and inferior maxillas and all other parts in connection, with them. The eye alone, is subject to one hundred and fifty-nine specific diseases, many requiring surgical operations of the first character. But this is principally owing to the constant exposure of this part of the body, and the aptitude of general diseases locating here as an effect.

Complimentary Letters.—We have failed to reply to many letters received, conveying much of our best reward in their commendatory terms of our efforts to accomplish the object of the Journal, and we beg to return to each and all, our sincere thanks for their grateful encouragement, and trust we may be able ever to retain such valuable opinions. Such letters, coming from men of the highest standing and abilities, induce us to believe, that we have not entirely failed in our purpose, of producing a periodical, which has met the wants of the profession.

This No. completes the first volume, and we shall enter upon the second with renewed efforts and encouragement.

Compound Lever Forceps.—We are in receipt of an instrument from Dr. J. C. Burch, of Evansville, Indiana, which he calls a *Compound Lever and Elevating Forceps;* it has some good qualities, and we propose giving a close description of it, when the proper cuts can be procured; until which time, we must beg the indulgence of Dr. B., as well as our readers.

Antidote to Arsenic.—We publish the following as a fact which savors of great usefulness, from the British American Med. and Surg. Journal.

"Mr. Lucas, of Beauvais, states, that in as many as nine cases of poisoning with arsenic, he has found calcined magnesia arrest the symptoms of poisoning, and remove its effects." An antidote so common is a valuable discovery.

Dr. J. V. C. Smith.—We are gratified to learn from the last number of the Boston Medical and Surgical Journal, that its able editor, Dr. Smith, whose letters, during the past year, from Europe, Asia and Africa, have so much interested us, has returned and renewed his editorial labors. Most cordially do we welcome him back, and we trust that ere long he will furnish a more extended account of his travels and observations than is contained in his letters. Such a book, and from so able a medical writer, would be read with great interest. It would furnish information upon many points which an accomplished medical man could only give.

Phrenology.—Many interesting facts are exhibited through the medium of occasional accidents which, if they do not go to establish general rules or support general laws, certainly justify, and should illicit the attention of such men as can unveil the obscurity by which they are surrounded, and throw light upon matters of much interest; such is the condition of phrenology, struggling by the assistance of many isolated facts, it still remains unestablished in the scientific world as one of its supports, or as a child of its nurture and care. That there is found much undue hostility towards any new science or philosophy is too true, yet the researches of all science, having nature for its subject, and truth its object, must eventuate, in the undisputed exemplification of the want or existence of these great principles. We should think that Magendie's and Bouillard's system of investigation is incomplete and should be abandoned, as also that of Sir Edward Hume's and others, from the fact that mutilation of any part of the living brain destroys or involves the functions of the nervous system generally, and functional disarrangements often ensue without visible organic lesion, and are symptomatic of diseases in other organs. Dr. Gall's method is greatly approved by those who have given much attention to the matter, and perhaps possesses many advantages. With these few remarks, we give a report of a case found in the London Medical Lancet, of much interest, and is as follows:

By C. W. Latham, Esq., M. R. C .S., London, Eng. A circumstance in the history of a case of congestive apoplexy, which has recently been under my care, the subject of which is now convalescent, appears to me sufficiently curious to interest some of my professional brethren, especially such as advocate the doctrines of phrenology.

"James T——, aged sixty-three, an old seaman, but who has been employed as a brewer's servant for the last thirty years, about two years ago, while in the employ of Messrs. Truman, Hanbury and Co., received a severe blow on the top of his head, from the falling of a heavy cellar-flap, on the under surface of which were affixed two iron bolts; one of these struck him on the right parietal bone, at its posterior superior angle, close by the posterior fontanelle. He was for a short time rendered insensible by the blow, but quickly recovered and returned to his work. Before this acci-

dent he was fond of music, could (to use his own expression) 'sing a very good song for a commoner,' was in the habit of whistling and singing at his work, and possessed a tolerable facility in acquiring new airs. From that time, however, he lost all musical power; on attempting to sing the most familiar air, he could not get over more than a single bar, when he became confused, and struck out into two or three other different tunes. He recognised any music which he had previously heard, but was quite incapable of singing it himself, or of acquiring anything new, as before.

"This is the only injury or inconvenience which he sustained; his memory, in other respects, and all his other faculties, are unimpaired; but although he has repeatedly put himself to the test since, he finds that his musical powers are still thus in abeyance."

Twelfth Annual Meeting of the American Society of Dental Surgeons.—The twelfth annual meeting of this association will commence its session the first Tuesday, 5th of August, at the United States Hotel, in Philadelphia, and as the place of meeting is quite central, we hope it will be well attended. We would be particularly gratified to meet, on that occasion, the members from the southern and western states. Heretofore they have complained, and we admit with some show of justice, that the meetings have been held too far north, and refused to attend on that account. We trust the place designated for the next meeting, will not be found objectionable to any, and that the members generally will endeavor to be present.

Completion of the First Volume of the New Series.—This number completes the first volume of the new series of the Journal, and although we were compelled to strike from our list the names of nearly one-half of the old subscribers, for delinquency, we are gratified to be able to state, that the number has more than doubled during the past year; and although some hundreds are yet in arrears, we sincerely trust, that none will long remain so. We need the money to enable us to carry on and improve the publication, and if those of our subscribers who are in arrears, will be a little more prompt in the payment of their subscriptions, it will save us much trouble and perplexity, and enable us to make the work more valuable than we have hitherto been able to do. In this connection, we would suggest to those who are in arrears, that, in sending the amount now due, it will afford a favorable opportunity of remitting the subscription for the next volume.

Chevalier's Drill Stock.—Since writing the notice of this instrument, we have received a very beautifully finished one, and find it useful. For many operations, such an instrument is indispensable.

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